Diamond Alkali Co.
NJD980528996
8.1.2
Passaic Valley Sewerage Commissioners

Passaic Valley Sewerage Commissioners
Response to Request for Information
USEPA, Region 2

Item No. 1.c
PVSC Report 1.c

Document order #4

Item No. 1.c

PVSC Report 1.c

Passaic Valley Sewerage Commissioners

Interim

Service Area Drainage and Land Use Report for the Towns of Harrison and Kearny, The Borough of East Newark, and the Cities of Newark and Paterson

Appendix B

Combined Sewer Overflow

Drainage Area and Control Information

The Towns of Harrison and Kearny and
The Borough of East Newark

February 1996

Killam

Passaic Valley Sewerage Commissioners

Interim

Service Area Drainage and Land Use Report for the Towns of Harrison and Kearny, The Borough of East Newark, and the Cities of Newark and Paterson

Appendix B

Combined Sewer Overflow

Drainage Area and Control Information

The Towns of Harrison and Kearny and The Borough of East Newark

February 1996

946190003

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

NEW (HAMILTON) STREET, HARRISON
H-001

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

NEW (HAMILTON) STREET OVERFLOW CHAMBER, HARRISON

This overflow chamber serves a tributary area of only 32 acres. It is provided with combined sewer facilities.

The estimated average daily dry weather flow is about 0.17 MGD and during wet weather months, it was estimated to be 0.33 MGD. This is an unusually high flow and is indicative of high infiltration in this small collection system (0.16 MGD).

Metering facilities and sampling equipment were installed in this chamber during the period May 12, 1975, and extending through July 6, 1975. During this period of time, rainfall occurred on seventeen separate occasions. It has been estimated that overflows occurred at this chamber on thirteen occasions. It has also been estimated that overflows will occur at this chamber about 55 to 70 times per year when rainfalls occur about 70 to 90 times per year.

It was found that the rainfall intensity required to cause overflow was about 0.07 inches per hour. The peak overflow rate as this chamber was found to be as high as 18 MGD. The volume of overflow, under the worst recorded storm conditions, was found to be about 1.1 MG.

Samples of the dry weather flow indicated suspended solids averaged about 191 mg/l, and BOD concentrations averaged 138 mg/l.

Samples taken during a storm flow condition indicated a range of BOD from a low of 47 mg/l to a high of 66 mg/l, and a range of suspended solids from a low of 106 mg/l to a high of 326 mg/l. It would appear

OVERFLOW DATA EXTRACT

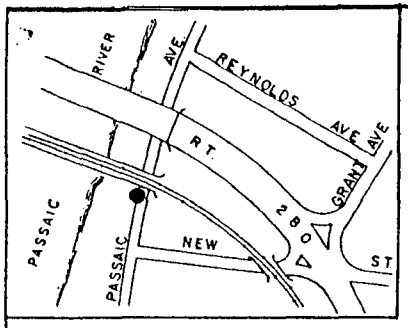
NEW (HAMILTON) STREET OVERFLOW CHAMBER

HARRISON

Chamber Location and Description

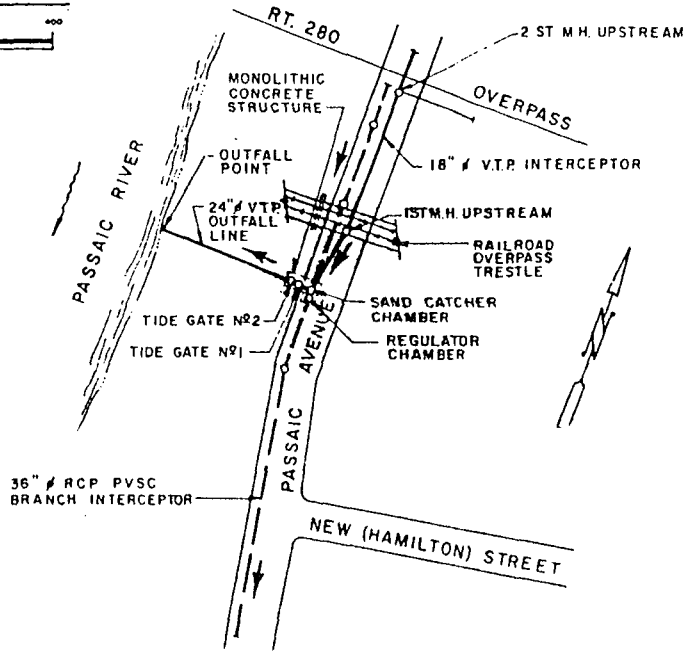
Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	about equally residential and industrial
Overflow Location (See Plate A):	in Passaic Avenue between New (Hamilton) St. and Erie-Lacka. Railway
District Outlet Sewer (See Plates A and B):	18" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none
Surcharge Effects:	surcharge observed at times due to capacity limitations and/or tide gate closure with high tides
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

from the above that the suspended solids during the storm flow period reflects flushing action from the peak storm flow rates. The BOD reflects the effect of pollution.



LOCATION PLAN

SCALE IN FEET



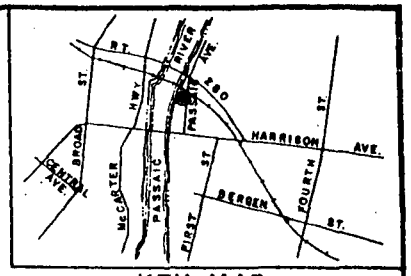
PLAN

SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1264 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

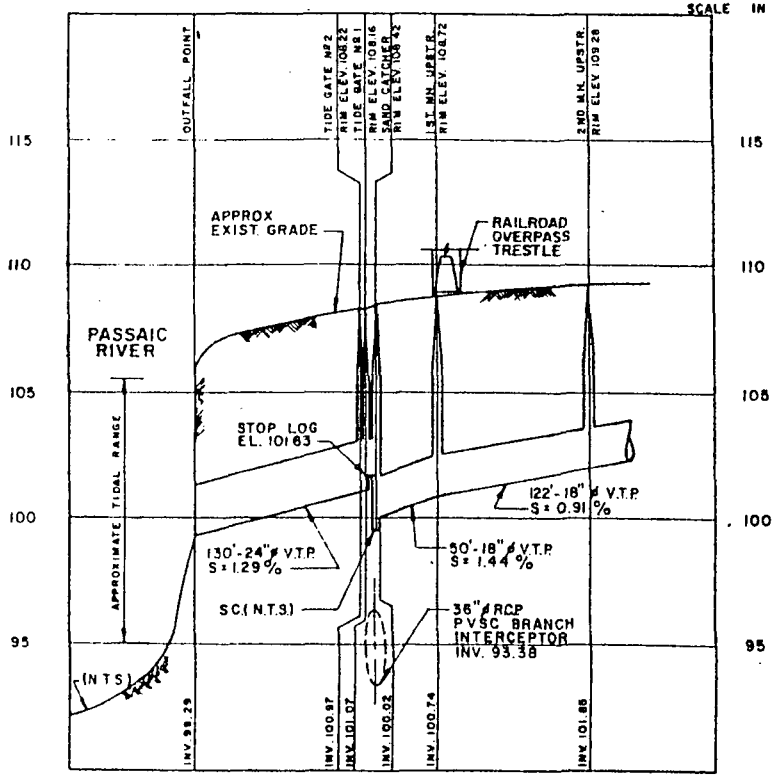
NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND
- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- R.C.P. = REINFORCED CONCRETE PIPE
- ● = OVERFLOW LOCATION



KEY MAP

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-001

NEW (HAMILTON) STREET, HARRISON

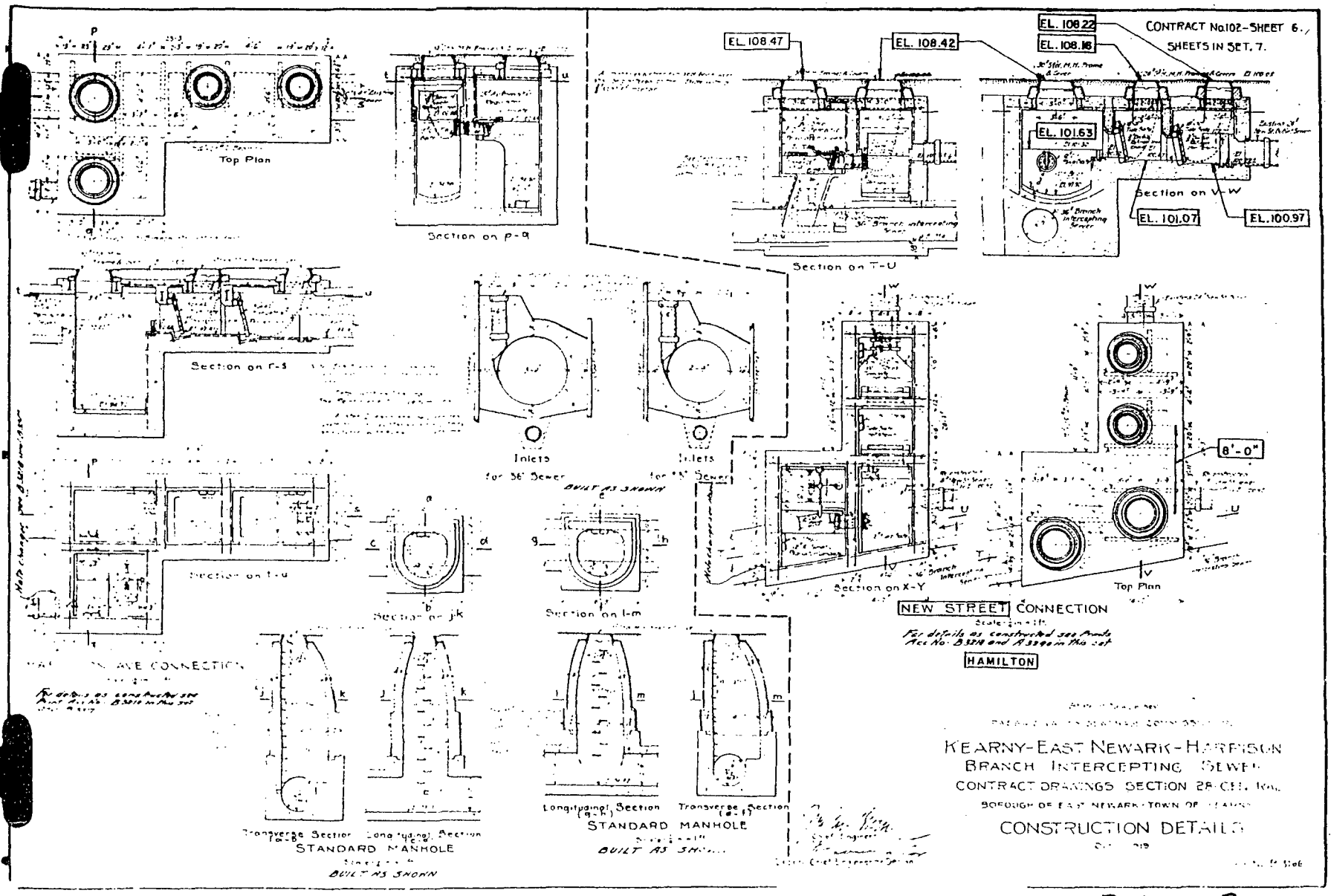
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

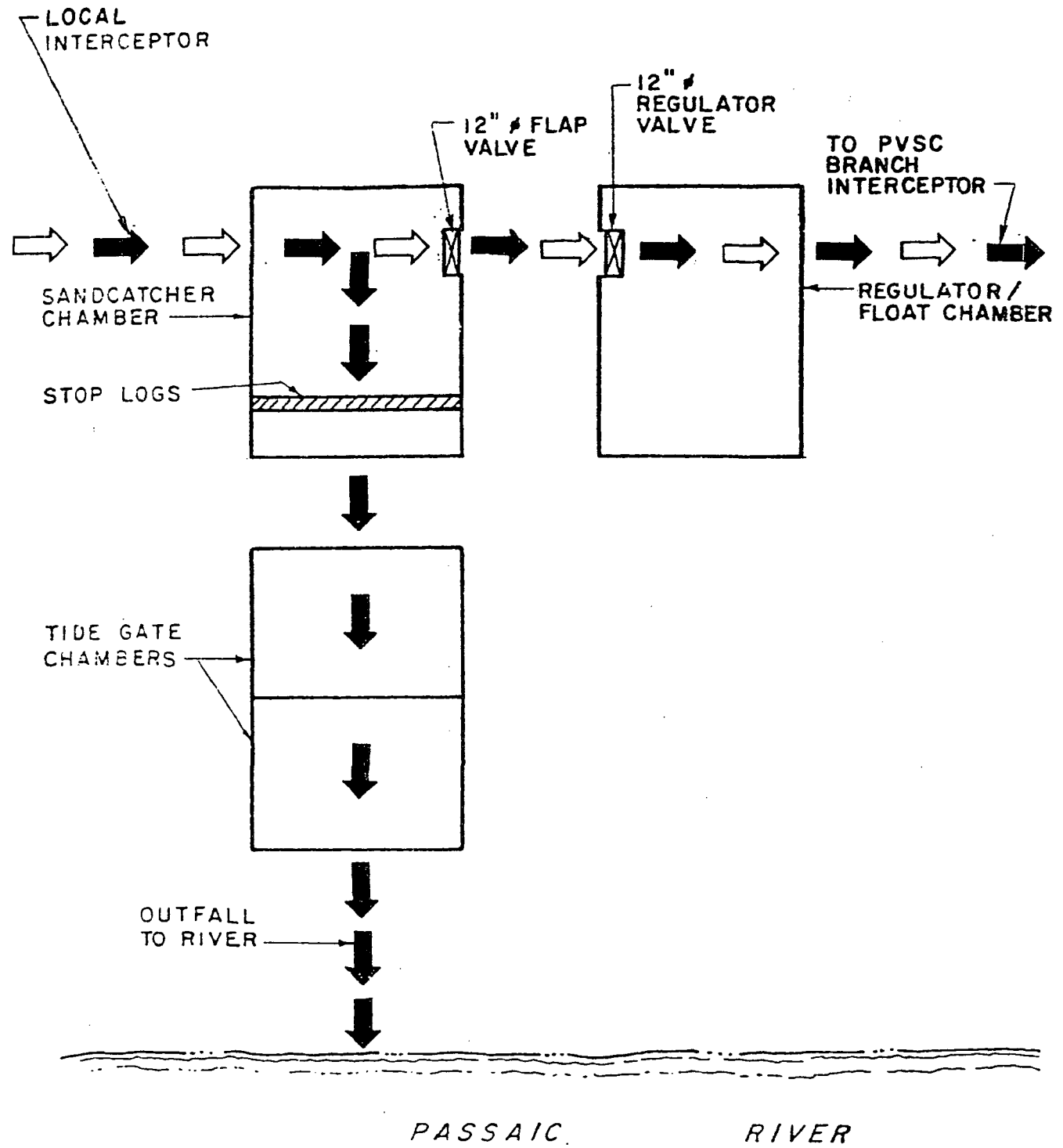
PLATE A

946190008



946190009

PLATE B



PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW (HAMILTON) STREET, HARRISON

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

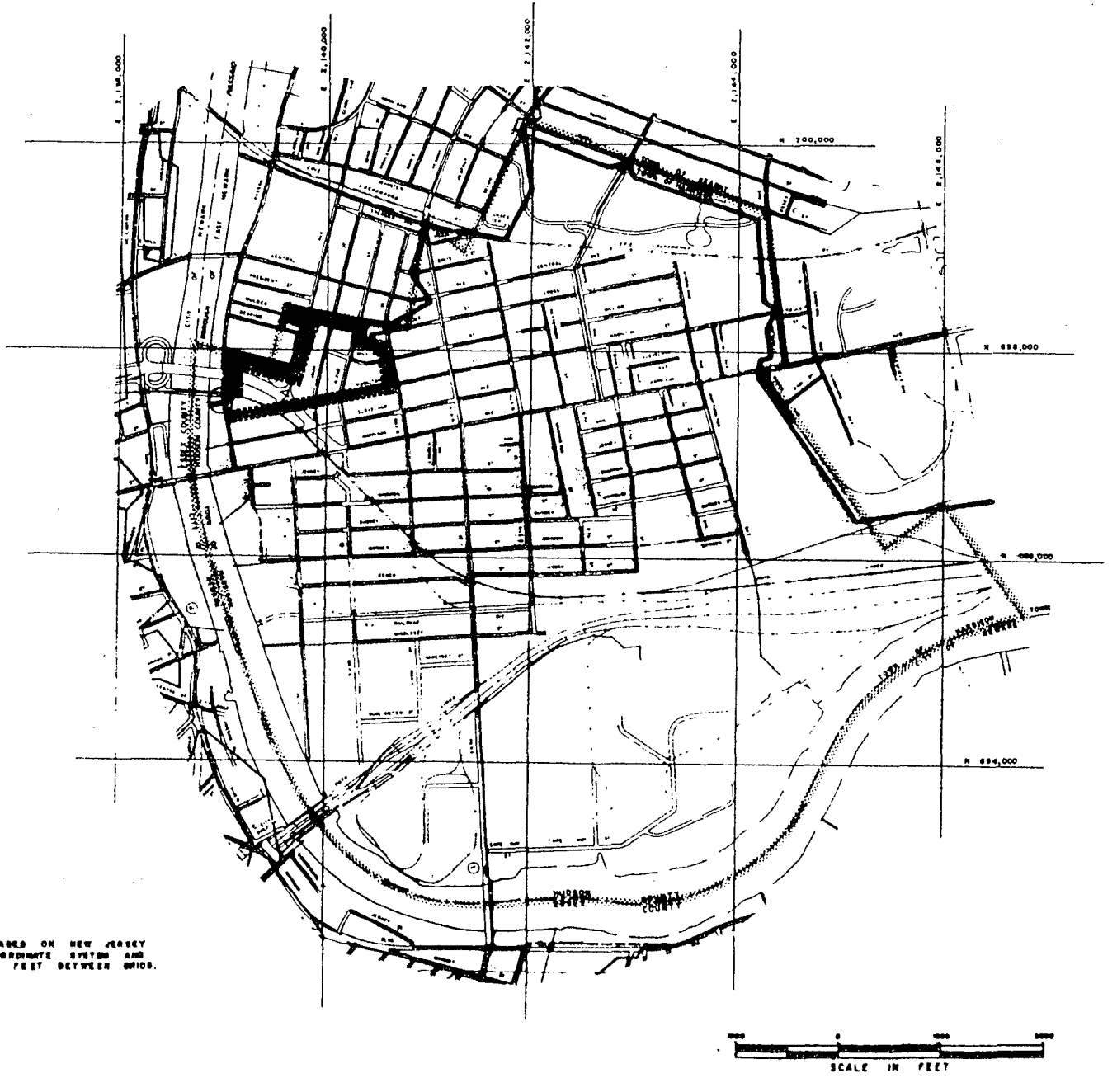
NEW (HAMILTON) STREET OVERFLOW CHAMBER H-001 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located at downstream end of sand catcher before opening to first tide gate chamber.
Tide Gate Condition:	both tide gates noted as leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.050 square miles - 32 acres
Average Daily Flow	
Seasonal Dry Weather:	0.17 MGD (estimated)
Seasonal Wet Weather:	0.33 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	3.0 MGD
Approximate Length of Combined Sewers Serving District:	6,500 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- NEW (HAMILTON) STREET OVERFLOW CHAMBER
- NEW (HAMILTON) STREET COLLECTION SYSTEM

N

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS 2000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW (HAMILTON) STREET, HARRISON

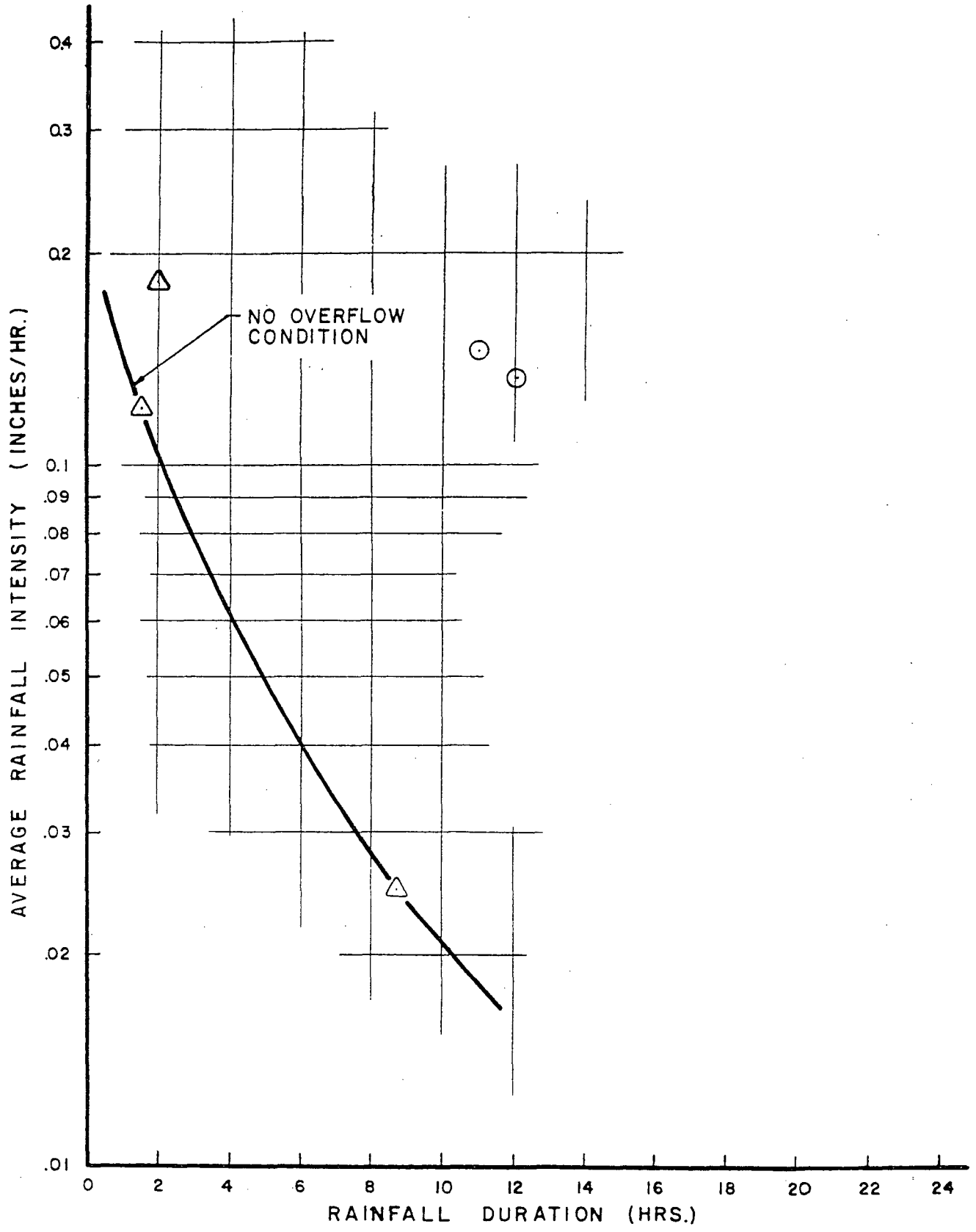
PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE D

946190012



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW (HAMILTON) ST., HARRISON

AVERAGE RAINFALL INTENSITY

VS.

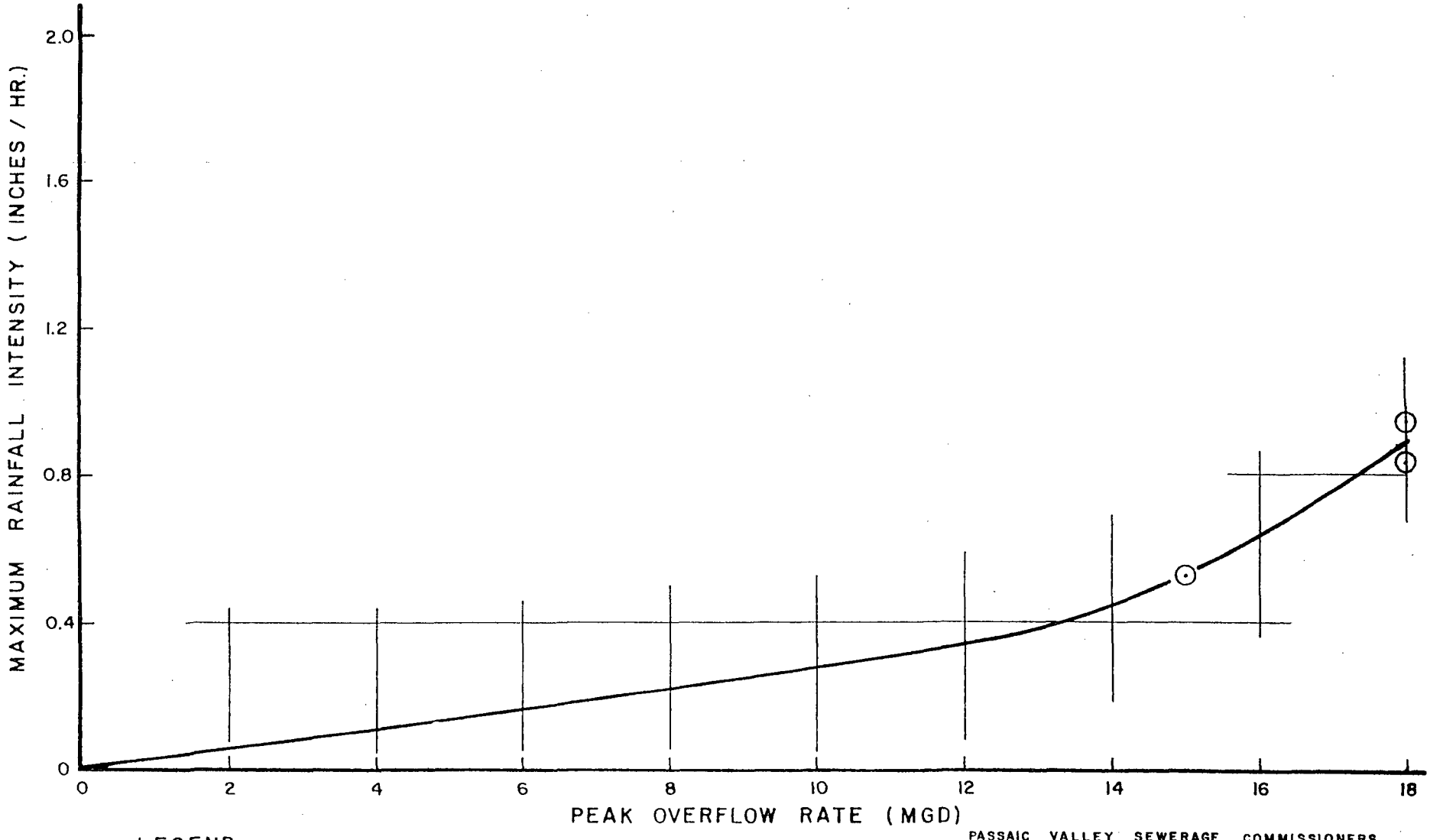
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 EXBEY STREET MILLBURN, NEW JERSEY 07041

946190013

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW (HAMILTON) STREET, HARRISON

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 48 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

P.V.S.C. Reference # I-28

Date December 5, 1974

Elson Killam Associates-Infiltration Studies -Set #14
Hamilton Street, Harrison, Second Manhole upstream from Sandcatcher
2:40 P. M., 12-3-74 to 1:30 P. M. 12-4-74

24 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D/B.O.D	B.O.D/C.O.D.
1 2"	7.7	N O T	E N O U G H		282	70	29.0	120	42.6
2 1"	7.8	"	S A„M P	L E„	457	84	18.4	154	33.7
3 ½"	7.7	"	"	"	529	102	19.3	240	45.5
4 2"	7.7	"	"	"	517	118	23.0	268	51.9
5 F	7.4	"	"	"	424	110	26.0	185	60.3
6 ½F	7.5	"	"	"	307	98	31.9	180	58.6
7 F	7.5	"	"	"	319	100	31.4	159	49.8
8 F	7.5	"	"	"	323	90	27.7	190	58.9
9 ½F	7.6	"	"	"	376	72	19.2	119	31.6
10 F	7.5	"	"	"	198	66	33.3	90	45.4
11 1"	7.6	"	"	"	113	48	42.5	50	44.3
12 1"	7.8	"	"	"	117	34	29.1	48	41.0
13 1"	7.8	"	"	"	73	30	41.2	73	--
14 1"	7.8	"	"	"	48	20	41.7	38	79.3
15 ½F	7.8	"	"	"	40	18	45.0	44	--
16-3/4F	7.8	"	"	"	28	18	64.4	30	--
17 F	7.7	"	"	"	81	32	39.6	90	---
18 F	7.7	"	"	"	343	116	46.2	190	55.4
19 F	7.7	"	"	"	396	104	26.3	204	51.5
20 F	7.8	"	"	"	420	114	22.2	280	66.6
21 F	7.7	"	"	"	493	138	28.0	165	33.5
22 F	8.1	"	"	"	303	98	32.3	182	60.5
23 F	7.7	"	"	"	299	90	30.1	182	61.2
24 1"	7.9	"	"	"	214	72	33.6	99	46.8
			A V E R A G E				32.6		

PVSC Reference # B-44 Date: 2/13/75

Elson T. Killam Associates - Infiltration Studies Sampler #348-Set #34
Hamilton(New) Street, Harrison- In sandcatcher O.F. # 010/H-001
1325-2/11/75 to 1120-2/12/75

22 Samples

Baseline

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.1	86	86	100.0	884	152	17.0	186	21.1
2	7.3	10	10	100.0	344	108	31.4	171	49.8
3	7.3	110	110	100.0	352	120	34.1	191	54.3
4	7.3	116	116	100.0	576	125	21.7	270	46.9
5	7.4	624	624	100.0	1192	140	11.7	180	15.1
6	7.2	910	910	100.0	2848	240	8.4	479	19.9
7	7.1	496	496	100.0	936	200	21.4	484	51.6
8	7.5	712	530	74.4	784	100	12.8	201	25.7
9	7.3	402	402	100.0	684	90	13.2	57	8.3
10	7.2	0	---	---	204	32	15.7	38	18.6
11	7.5	112	92	82.1	328	69	21.0	96	29.3
12	7.2	22	22	100.0	132	26	19.7	18	13.6
13	7.3	18	18	100.0	52	24	46.2	30	57.8
14	7.5	6	6	100.0	116	18	15.5	42	36.2
15	7.4	8	8	100.0	28	12	42.9	18	64.3
16	7.5	0	--	---	24	14	58.4	10	41.7
17	7.8	22	22	100.0	20	16	80.0	9	45.0
18	7.6	10	10	100.0	52	32	61.6	35	67.4
19	8.6	20	20	100.0	180	60	33.3	76	42.2
20	8.4	64	64	100.0	232	90	38.7	107	46.2
21	7.8	44	44	100.0	300	78	26.0	117	39.0
22	7.9	28	28	100.0	404	108	26.7	216	53.5
							29.9		38.5
NOTE:	samples contained large amounts of fibrous material								

946190016

PVSC Reference # F-216

Date: 6-16-75

Elson T. Killam Associates - Infiltration Studies
Hamilton Street, Harrison - Sandcatcher
14:00 - 6-10-75 to 09:00 - 6-11-75

Sampler No. 305
Set No. 24
Chamber No. 010/H-001

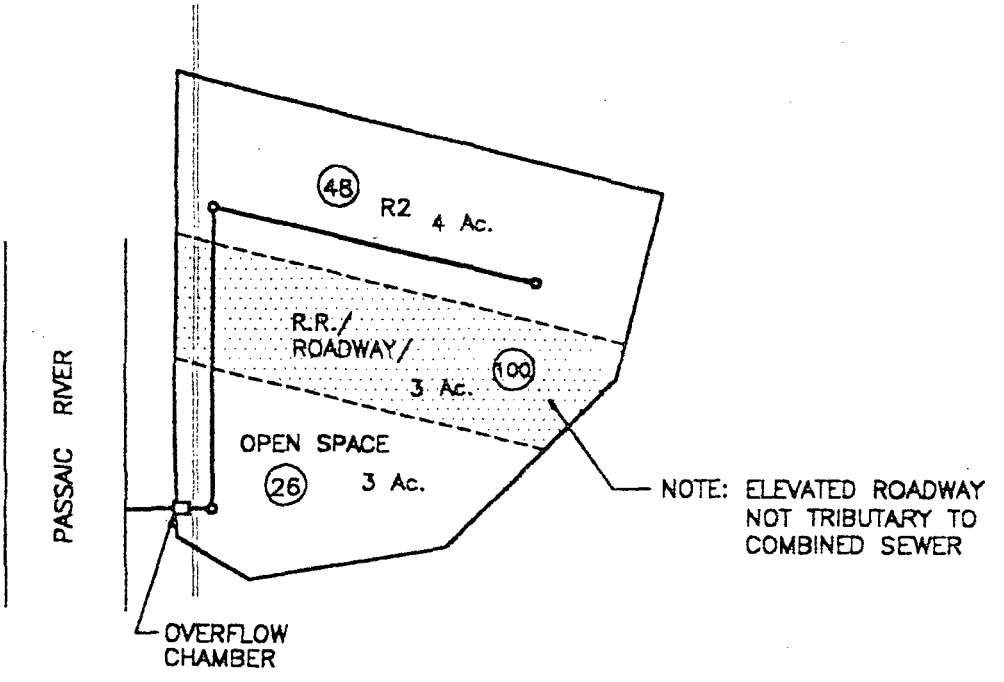
BASELINE

19 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/TOC%
1	6.9	124	100	80.7	335	80	23.8	-	-
2	7.0	50	22	44.0	327	88	26.9	-	-
3	7.4	124	89	71.8	356	92	25.8	-	-
4	7.5	78	54	69.3	291	88	30.2	-	-
5	7.2	111	102	91.9	276	100	36.3	-	-
6	7.2	43	20	46.5	315	100	31.7	-	-
7	7.4	145	126	87.0	255	88	34.5	-	-
8	7.8	89	81	91.1	339	72	21.2	-	-
9	7.3	34	30	88.3	178	51	28.6	-	-
10	7.4	37	13	35.1	158	44	27.8	-	-
11	7.3	20	6	30.0	117	34	29.1	-	-
12	7.2	20	0	0.0	73	23	31.5	-	-
13	7.4	12	12	100.0	48	19	39.6	-	-
14	7.2	3	3	100.0	40	13	32.5	-	-
15	7.5	7	7	100.0	32	11	34.4	-	-
16	7.3	25	15	60.0	53	10	18.9	-	-
17	7.5	18	0	0.0	69	17	24.6	-	-
18	7.4	23	13	56.6	149	46	30.9	-	-
19	7.8	120	97	80.7	319	112	35.1		
						Average	29.7		

946190017

LAND USE	%	ACRES
R3	---	---
R2	57	4
R1	---	---
OPEN SPACE	43	3
INDUSTRIAL	---	---
COMMERCIAL	---	---
R.R./ROADWAY	---	3
TOTAL	100	10



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
HAMILTON STREET OVERFLOW
TOWN OF HARRISON

Killam
Associates • Consulting Engineers

946190018

FIGURE H-001

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

CLEVELAND AVENUE, HARRISON
H-002

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

CLEVELAND AVENUE OVERFLOW CHAMBER, HARRISON

This overflow chamber serves a very small district of only 11 acres. The district is served with combined sewers.

The estimated average daily dry weather flow was about 0.14 MGD, and during wet weather months was about 0.19 MGD, which reflects a relatively high infiltration rate (0.05 MGD).

During the period of study, which extended from February 5, 1975 through June 16, 1975, rainfall occurred on 32 occasions. It has been estimated that overflow occurred on 18 of these occasions. It was found that the intensity of rainfall required to cause overflow was about 0.04 inches per hour. It has been estimated that overflows at this chamber will occur about 40 to 50 times per year, based upon rainfalls occurring 70 to 90 times per year.

Under overflow conditions, it was found that the peak rates of overflow were as high as 12.2 MGD, and that the volume of overflow was as high as 0.3 MG.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

The average characteristics of the waste under dry flow conditions were found to be 101 mg/l for suspended solids and 170 mg/l for BOD.

Under storm flow conditions, the suspended solids were found to be unusually low, ranging from a low of 39 mg/l to a high of 68 mg/l, and the BOD was found to be about 94 mg/l on the average. This would appear to reflect the effect of storm water dilution upon the wastewater characteristics.

ELSON T. KILLAM ASSOCIATES, INC.

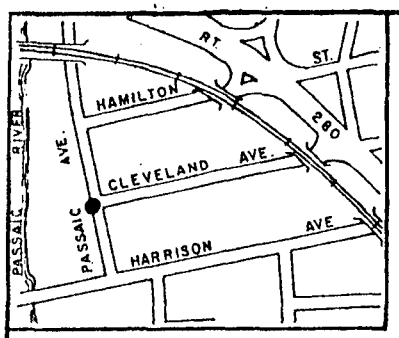
OVERFLOW DATA EXTRACT

CLEVELAND AVENUE OVERFLOW CHAMBER

HARRISON

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some residential flow
Overflow Location (See Plate A):	in west side of intersection of Cleveland Avenue and Passaic Avenue
District Outlet Sewer (See Plates A and B):	20" diameter VTP sewer
Outfall to River (See Plates A and B):	20" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed due to capacity limitations and/or tide gate closure during high tides
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

SCALE IN FEET

NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND
- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T. G. = TIDE GATE
- UP STR. = UP STREAM
- DN. STR. = DOWNSTREAM
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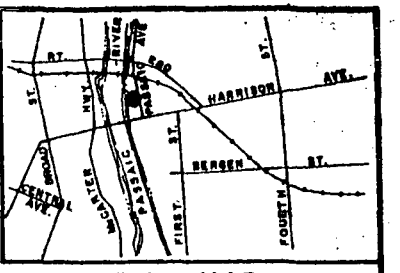
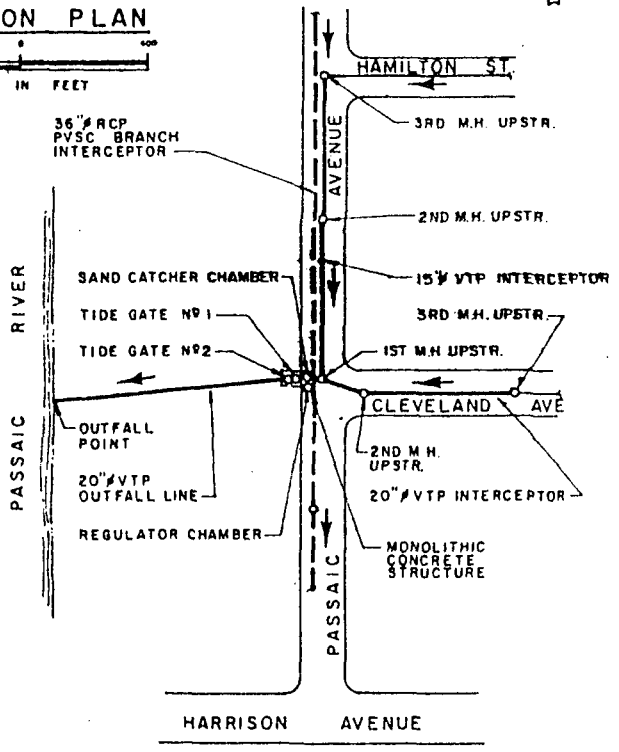


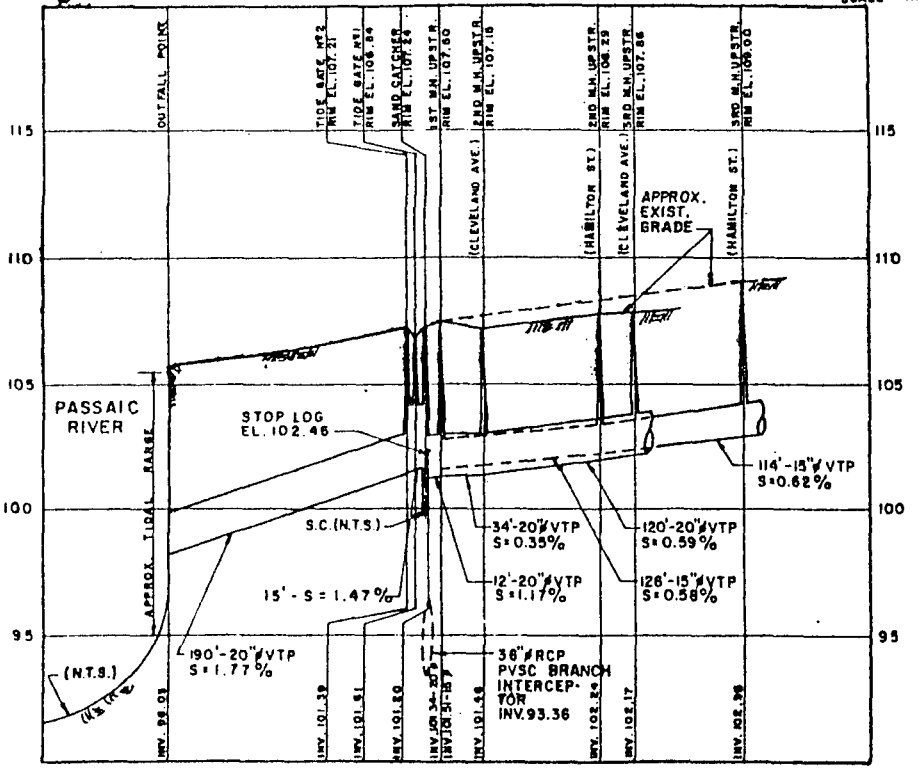
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1284 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-00Z

CLEVELAND AVENUE, HARRISON

PLAN AND PROFILE

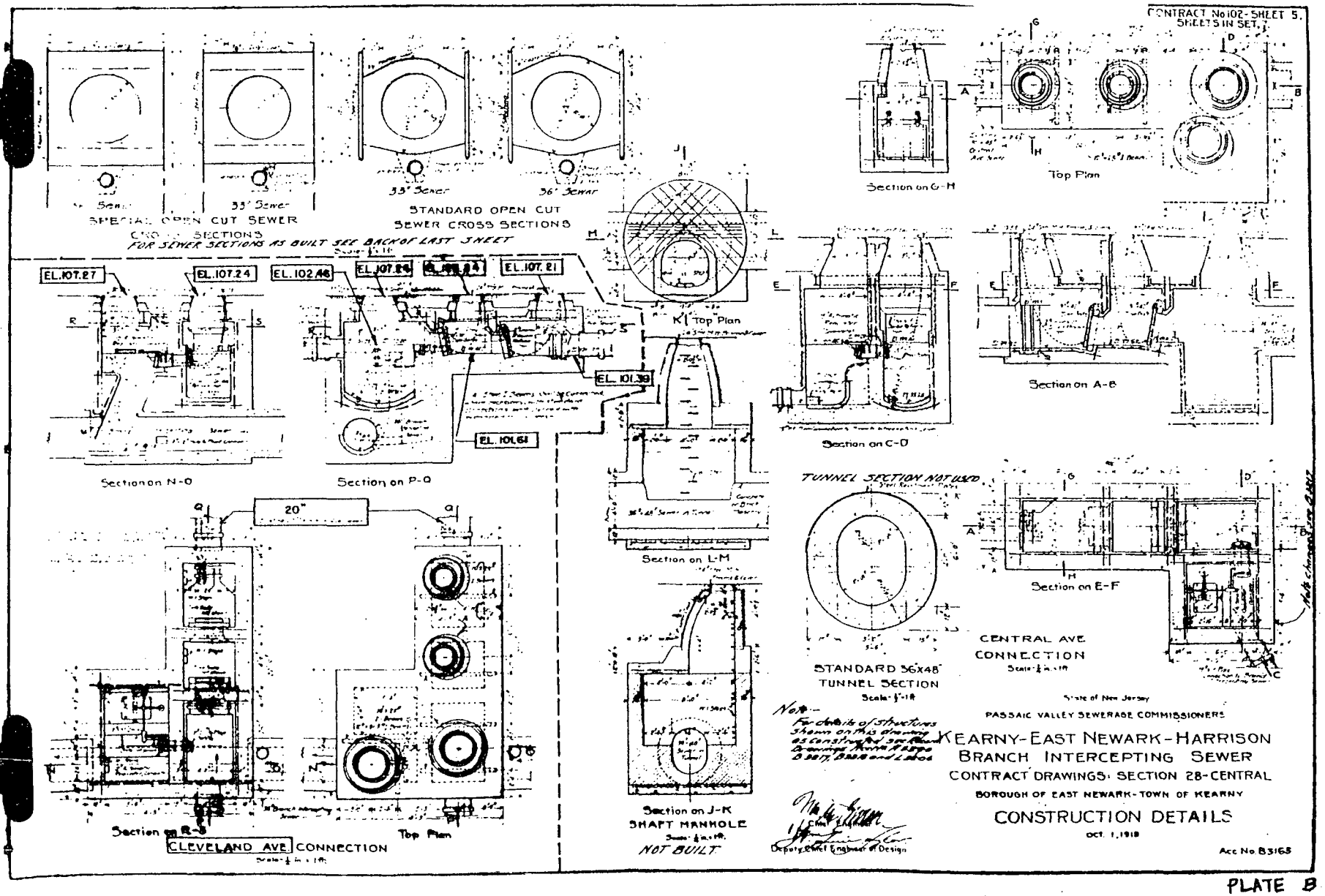
ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A

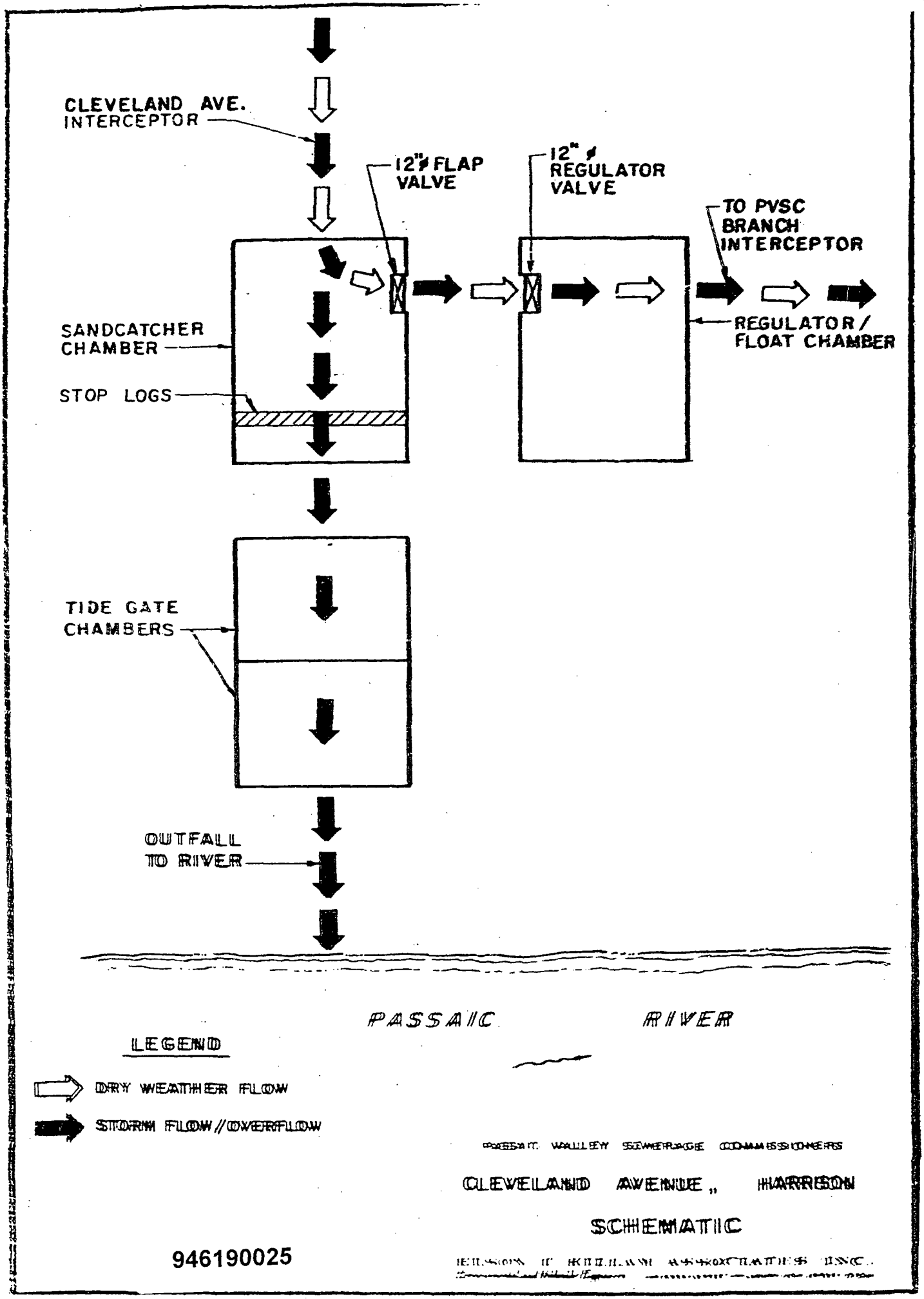
946190023

946190024



(3)

PLATE B



PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLEVELAND AVENUE, HARRISON

SCHEMATIC

946190025

PLATE C

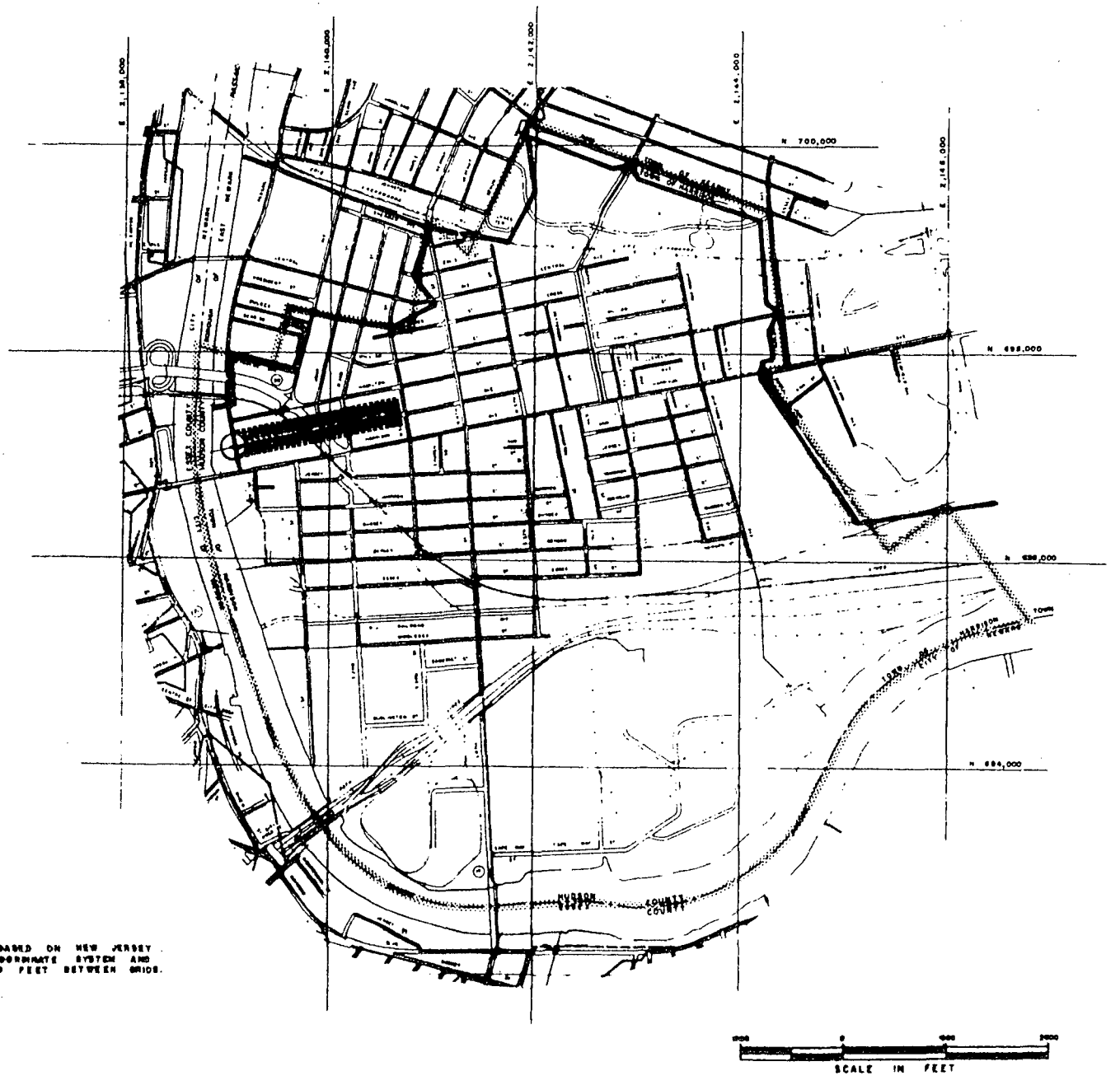
CLEVELAND AVENUE OVERFLOW CHAMBER H-002 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in downstream end of sand catcher just before portal to first tide gate chamber
Tide Gate Condition:	both tide gates noted as leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.017 square miles-11 acres
Average Daily Flow	
Seasonal Dry Weather:	0.14 MGD (estimated)
Seasonal Wet Weather:	0.19 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	3.2 MGD
Approximate Length of Combined Sewers Serving District:	2,300 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- CLEVELAND AVENUE OVERFLOW CHAMBER
- CLEVELAND AVENUE COLLECTION SYSTEM

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS 2000 - 2000 FEET BETWEEN GRIDS.

SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLEVELAND AVENUE, HARRISON

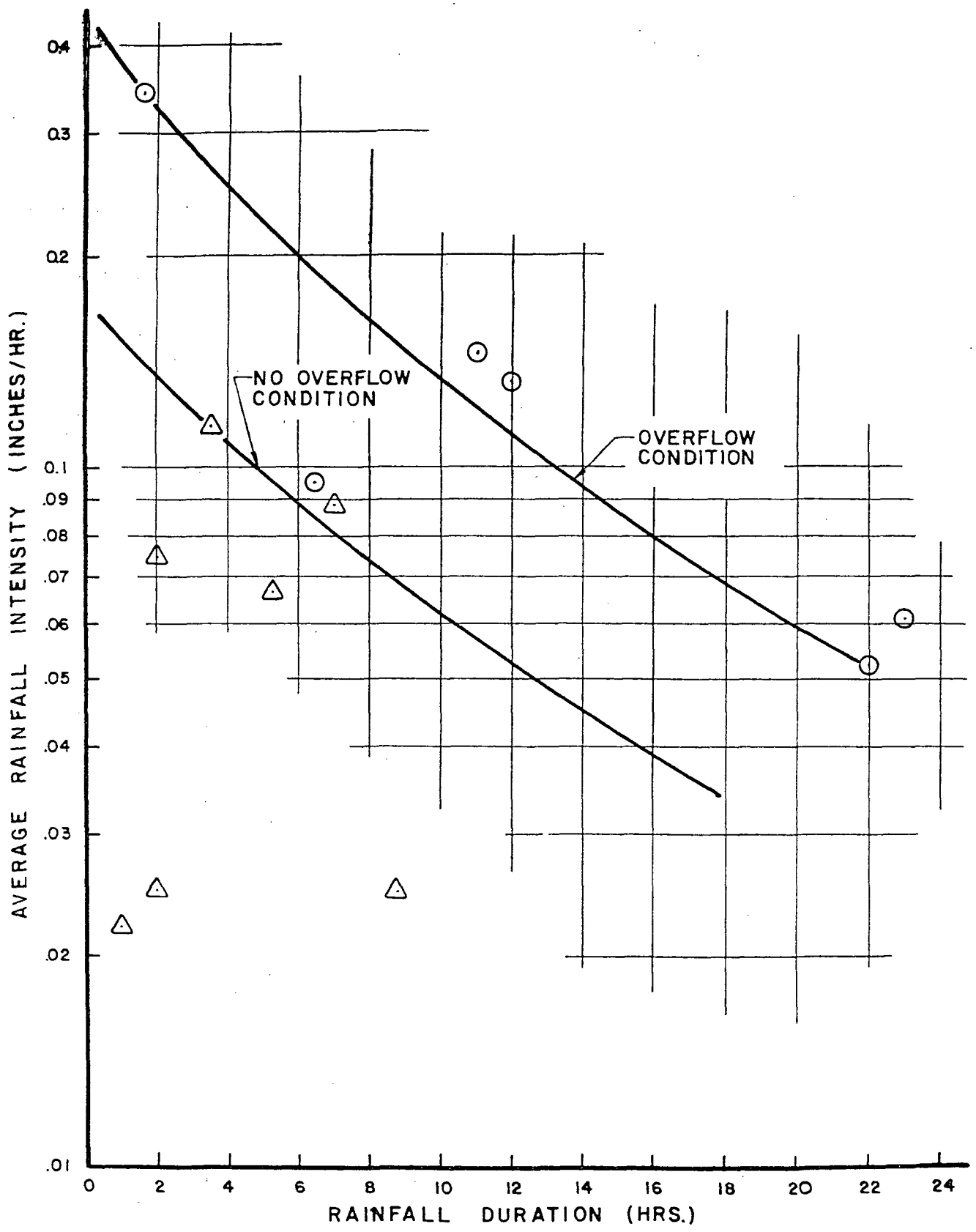
PLAN OF COLLECTION SYSTEM

ELTON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE D

946190027



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLEVELAND AVENUE, HARRISON

AVERAGE RAINFALL INTENSITY

VS.

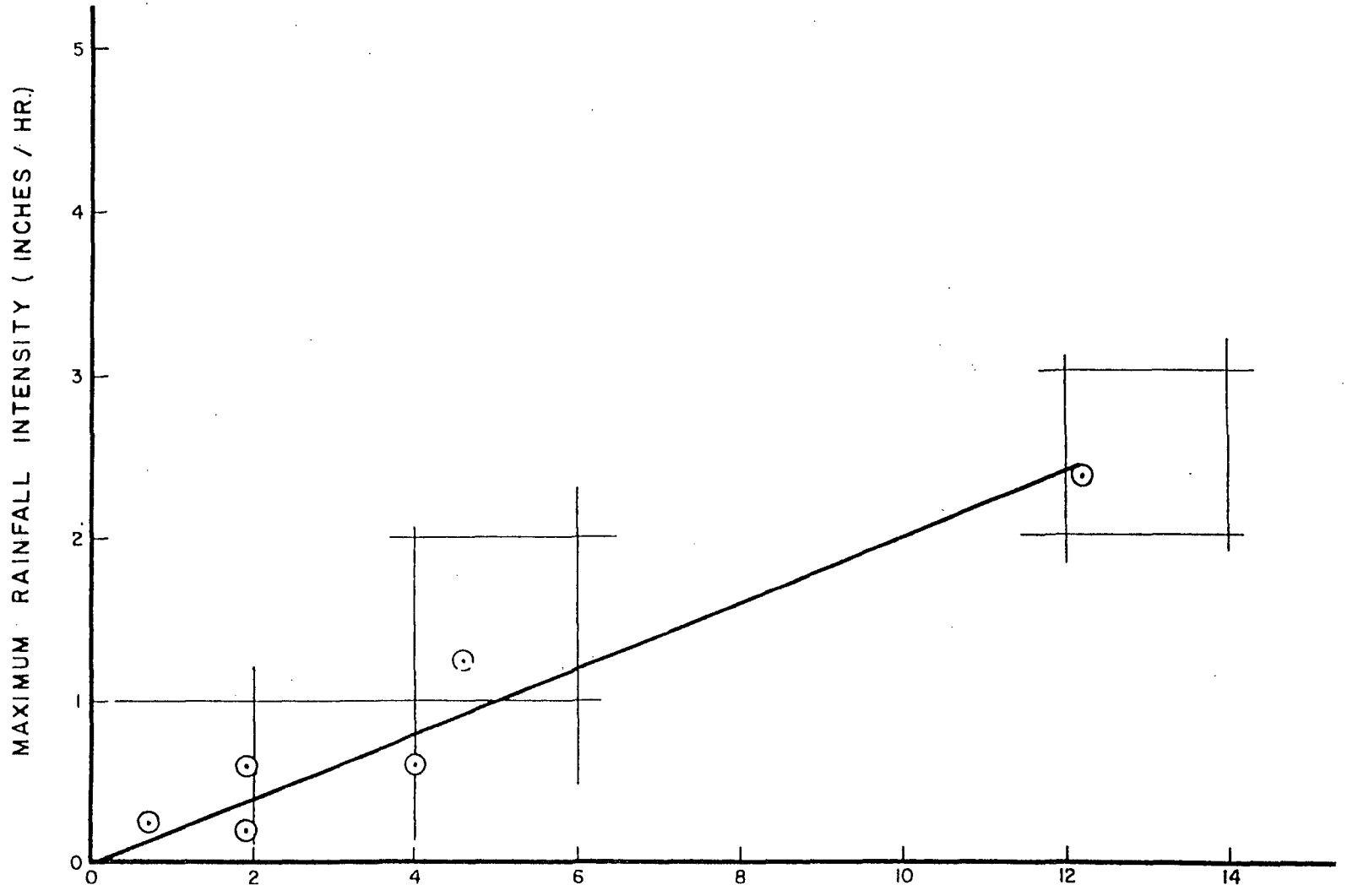
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190028

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLEVELAND AVENUE, HARRISON

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 48 ESSEX STREET, HILLBURN, NEW JERSEY 07041

PLATE F

946190029

PVSC Reference # H-228

Date: 8/21/75

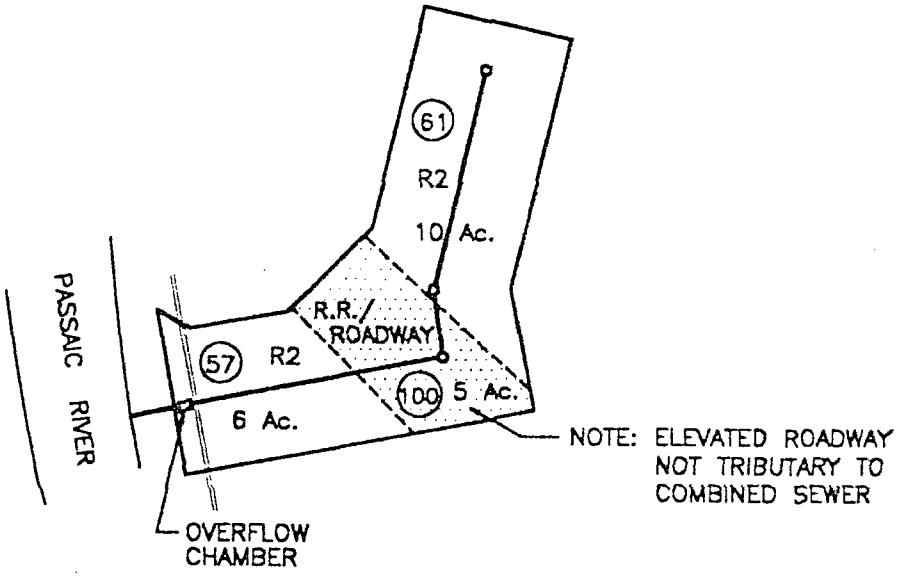
Elson T. Killam Associates - Infiltration Studies
Cleveland Avenue, Harrison - Sandcatcher
15:55 - 8/11/75 to 15:55 - 8/12/75

Chamber #011/H-002
Sampler #325
Set #48

	23 SAMPLES						BASELINE			
SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC COD%	BOD	BOD COD%	
1	7.5	100	62	62.0	336	112	33.3	190	56.6	
2	7.1	158	150	95.0	316	116	36.7	210	66.5	
3	7.0	142	130	91.6	332	120	36.2	271	81.6	
4	6.9	184	84	45.6	484	185	38.2	318	65.7	
5	7.1	106	100	94.3	344	120	34.9	177	51.5	
6	7.1	126	116	92.0	336	135	40.2	252	75.0	
7	7.3	80	72	90.0	240	105	43.8	181	75.5	
8	7.5	82	80	97.7	320	88	27.4	126	39.1	
9	7.5	30	20	66.7	200	87	43.5	138	69.0	
10	7.6	40	38	95.0	148	57	38.5	103	69.7	
11	7.5	44	44	100.0	112	36	32.1	35	31.2	
12	7.4	16	16	10.0	96	34	35.4	60	62.5	
13	7.4	26	16	61.5	76	32	42.2	53	69.8	
14	7.6	22	6	27.2	68	26	38.3	-	-	
15	7.7	12	4	33.3	116	42	36.2	87	75.0	
16	7.8	60	50	83.3	204	60	29.4	126	61.8	
17	8.2	130	104	80.0	384	120	31.3	240	62.5	
18	8.0	328	288	87.9	588	136	23.2	221	37.6	
19	7.8	128	96	75.0	352	124	35.3	223	66.2	
20	8.0	206	176	85.5	660	180	27.3	256	38.8	
21	7.5	98	98	100.0	464	128	27.6	238	51.3	
22	7.4	56	34	60.8	268	100	37.4	225	84.0	
23	NS	NS	NS	NS	NS	NS	NS	NS	NS	
24	7.8	144	108	75.0	276	92	33.3	168	60.9	
							34.9		61.4	

946190030

LAND USE	%	ACRES
R3	---	---
R2	100	16
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	---	---
R.R./ROADWAY	---	5
TOTAL	100	21



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
CLEVELAND AVENUE OVERFLOW
TOWN OF HARRISON

Killam
Associates • Consulting Engineers

946190031

FIGURE H-002

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

HARRISON AVENUE, HARRISON
H-003

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

HARRISON AVENUE OVERFLOW CHAMBER, HARRISON

This overflow chamber serves a relatively small area of only 67 acres. The area is provided entirely with combined sewers.

The estimated average daily flow was about 0.8 MGD during the dry weather months and it is estimated that it is about 1.1 MGD during wet weather months.

Metering facilities and automatic sampling equipment were installed in this chamber and observations made for a period extending from April 24, 1975 through June 6, 1975. During this period of time, rainfall occurred on eighteen occasions and it was determined that eleven overflows occurred. It is estimated that overflows at this chamber occur from 45 to 55 times per year, and that rainfalls occur on about 70 to 90 occasions per year. It was found that the average rainfall intensity required to cause overflow was approximately 0.04 inches per hour.

It was found that the peak rates of overflow ranged up to about 20 MGD, and that the overflow volume was as high as 3 MG.

Samples were taken of the wastes and it was found that under dry weather flow conditions the suspended solids were about 194 mg/1, and the BOD approximately 188 mg/1.

Under storm flow conditions, the suspended solids was found to range from a low of 69 mg/1 to a high of 260 mg/1 and BOD ranged from a low of 49 mg/1 to a high of 203 mg/1. It would appear, from the above, that the dilution effect resulted in a less concentrated effluent under storm flow conditions.

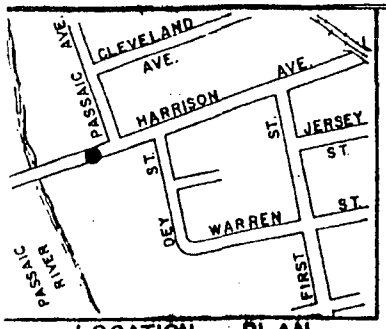
OVERFLOW DATA EXTRACT

HARRISON AVENUE OVERFLOW CHAMBER

HARRISON

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some (approx. 15%) domestic flow
Overflow Location (See Plate A):	west of intersection of Harrison Avenue and Passaic Avenue, between Passaic Avenue and Passaic River
District Outlet Sewer (See Plates A and B):	30" x 45" elliptical brick sewer
Outfall to River (See Plates A and B):	30" x 45" elliptical brick sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none observed
Surcharge Effects:	surcharge observed due to capacity limitations and/or tide gate closure
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



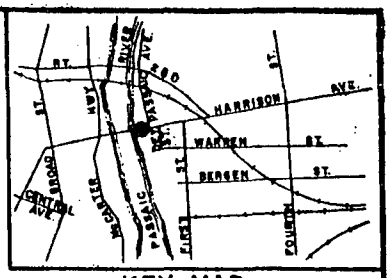
LOCATION PLAN

SCALE IN FEET

NOTE:
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

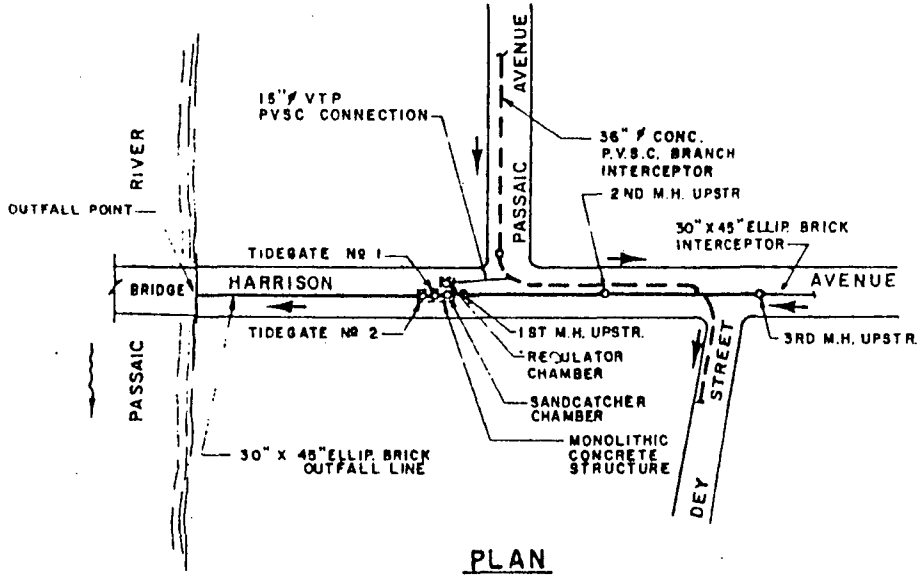
LEGEND:

- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR = UP STREAM
- DN. STR. = DOWN STREAM
- N.T.S. = NOT TO SCALE
- ● = OVERFLOW LOCATION



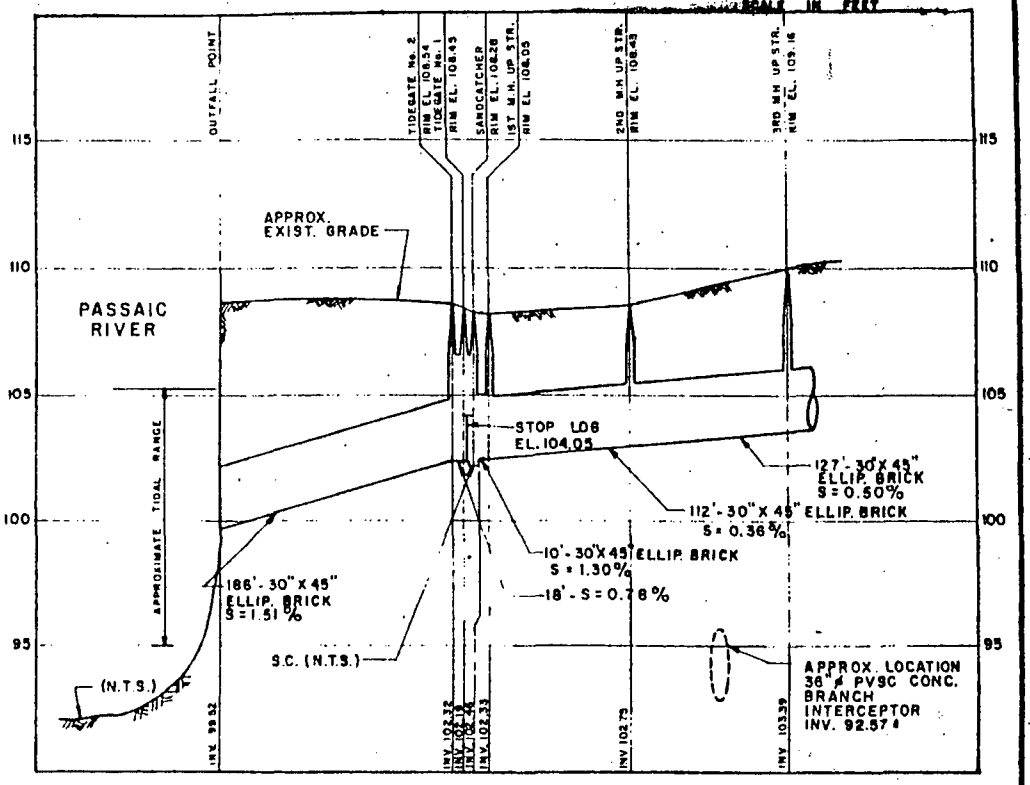
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON U.S.C. & G.S. MON. 1864 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-003

HARRISON AVENUE, HARRISON

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Consulting and Hydraulic Engineers

PLATE A

946190035

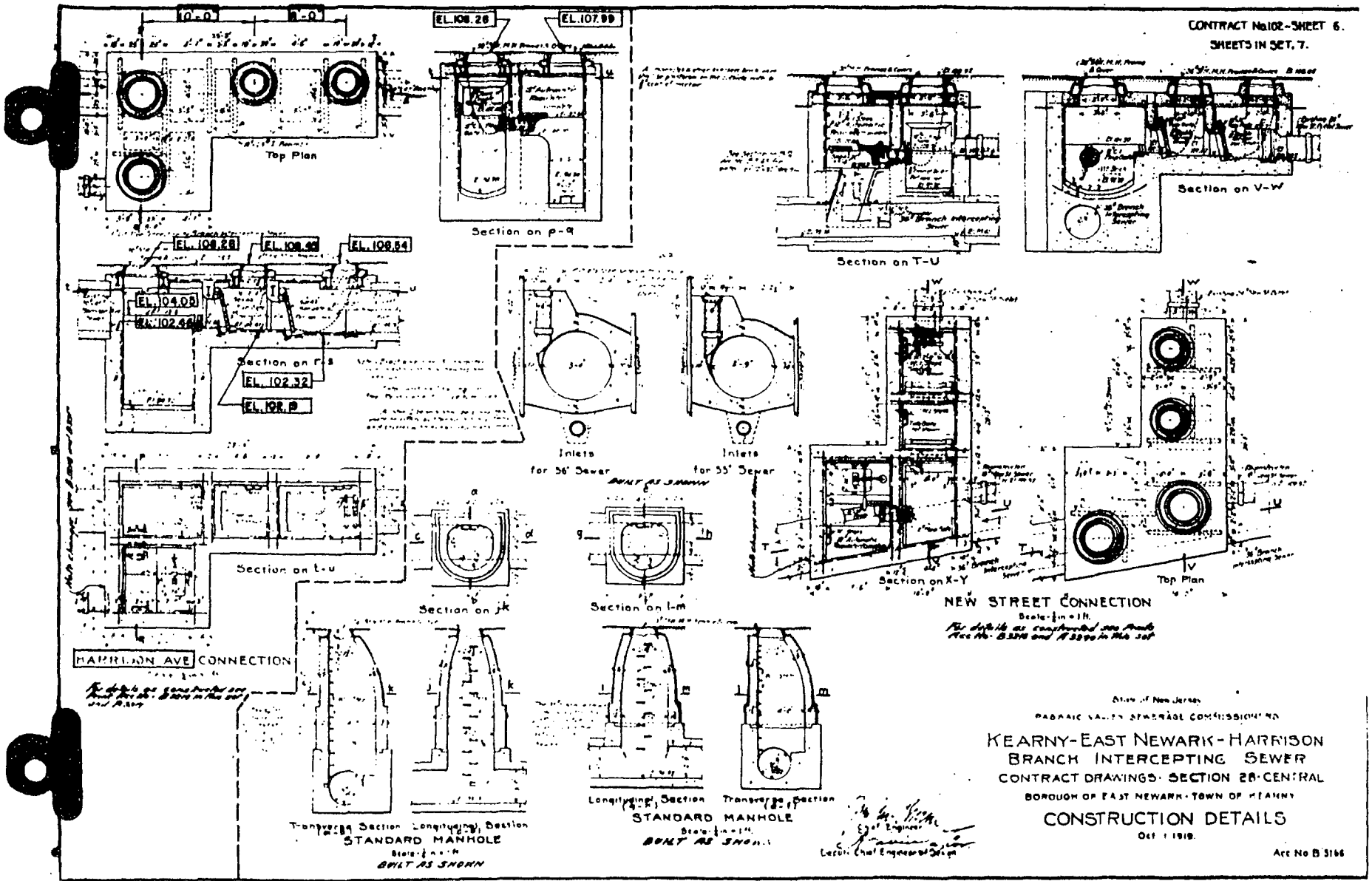
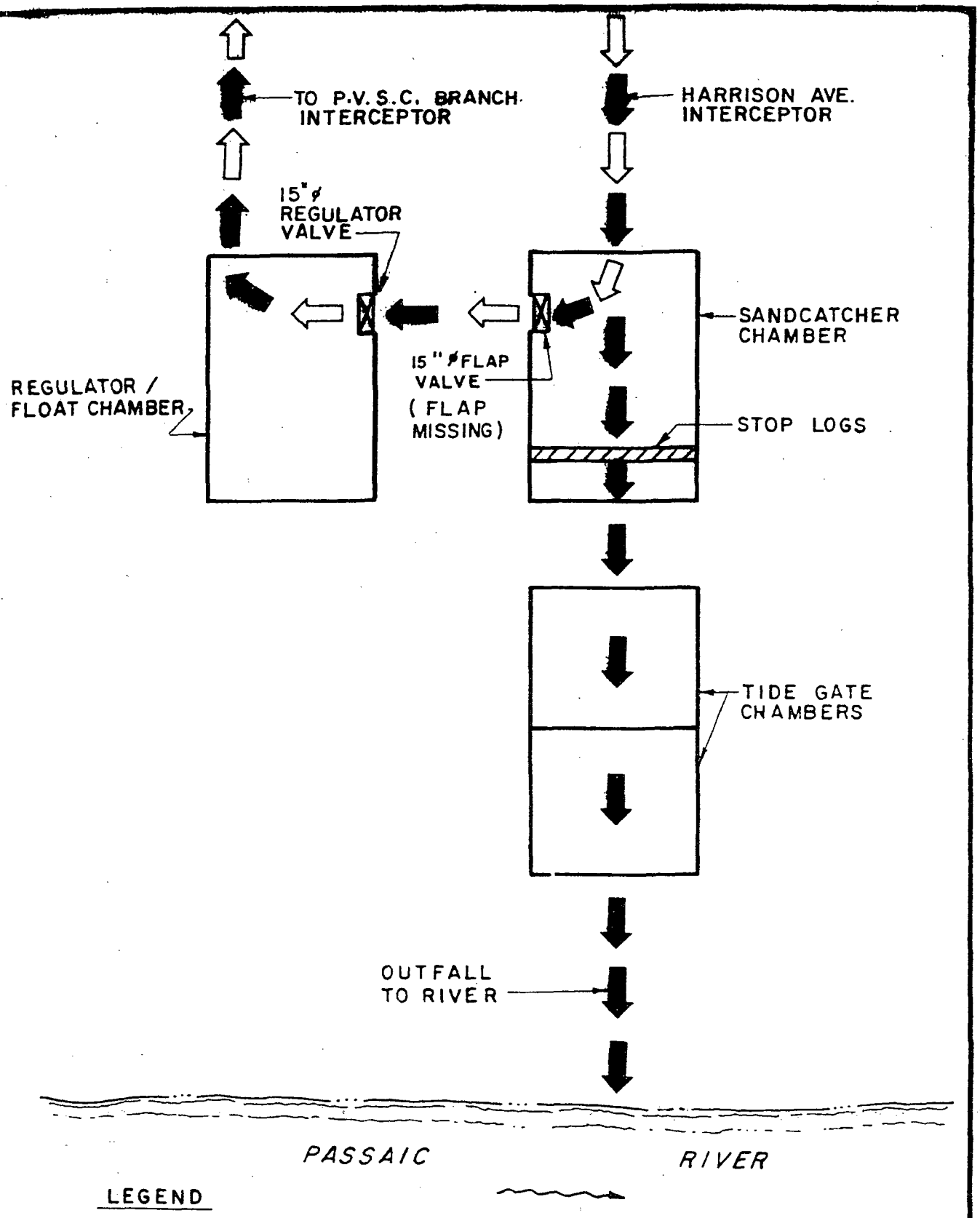


PLATE B

946190036



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

HARRISON AVENUE, HARRISON

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

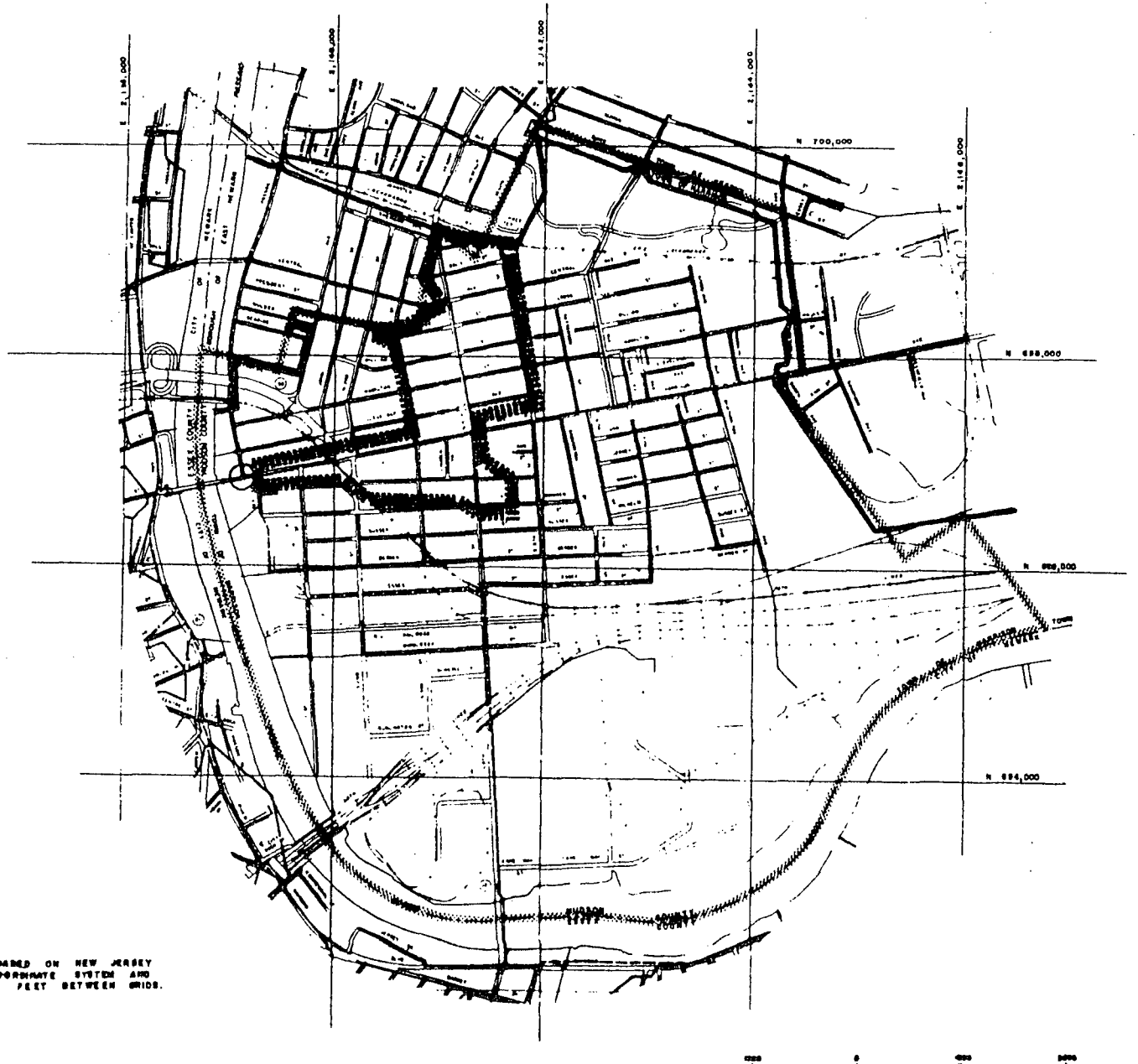
HARRISON AVENUE OVERFLOW : H-003 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located at downstream end of sand catcher at portal to outfall line
Tide Gate Condition:	both tide gates leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.105 square miles - 67 acres
Average Daily Flow	
Seasonal Dry Weather:	0.77 MGD (estimated)
Seasonal Wet Weather:	1.08 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	5.8 MGD
Approximate Length of Combined Sewers Serving District:	15,000 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- HARRISON AVENUE OVERFLOW CHAMBER
- HARRISON AVENUE COLLECTION SYSTEM

N

SCALE IN FEET

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS 4000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

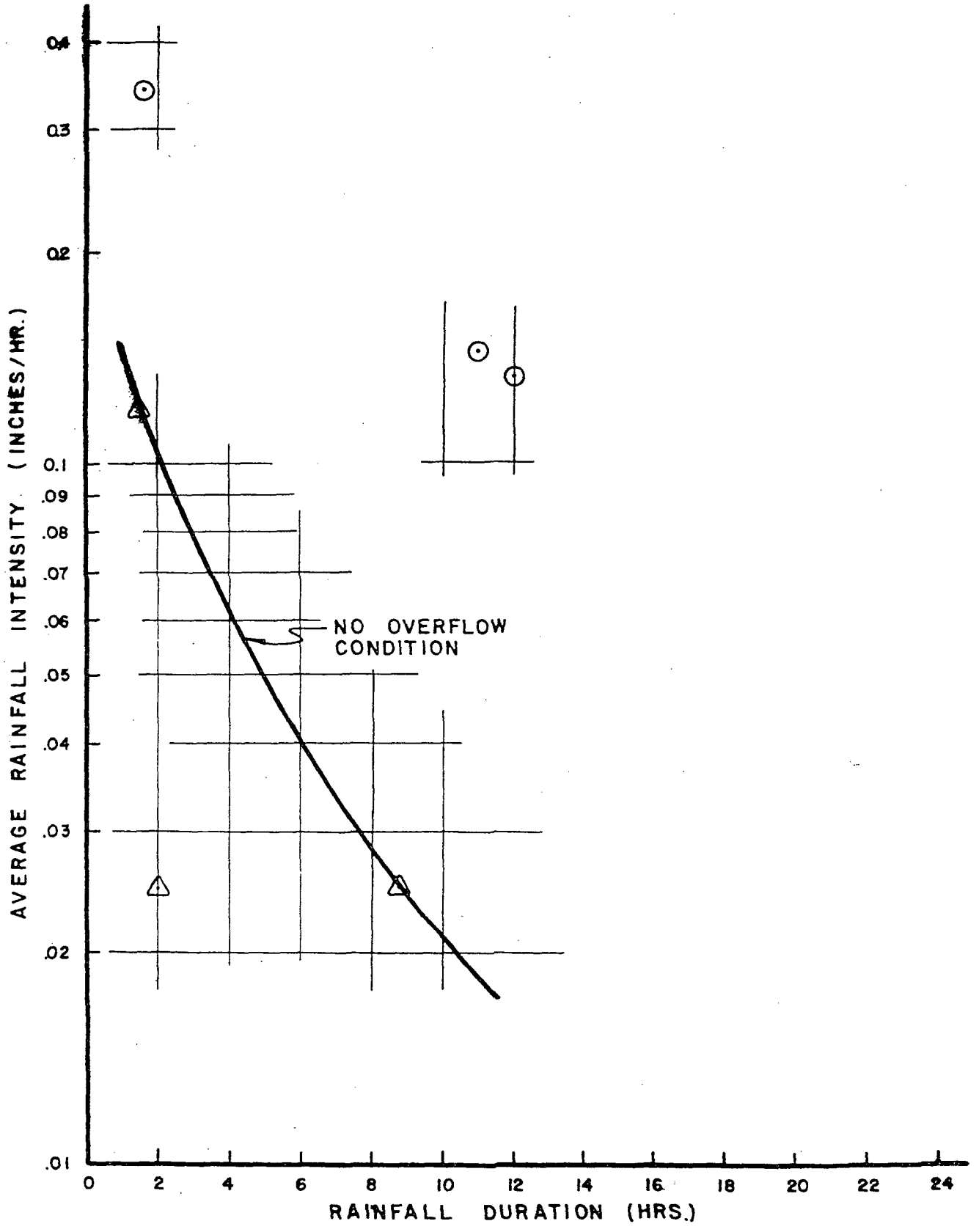
HARRISON AVENUE, HARRISON

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D

946190039



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

HARRISON AVENUE, HARRISON

AVERAGE RAINFALL INTENSITY

VS.

RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190040

PLATE E

PVSC Reference # B-47

Date: 2/13/75

Elson T. Killam Associates - Infiltration Studies
Harrison Ave., Harrison- In sandcatcher
1035 - 2/10/75 to 1030 - 2/11/75

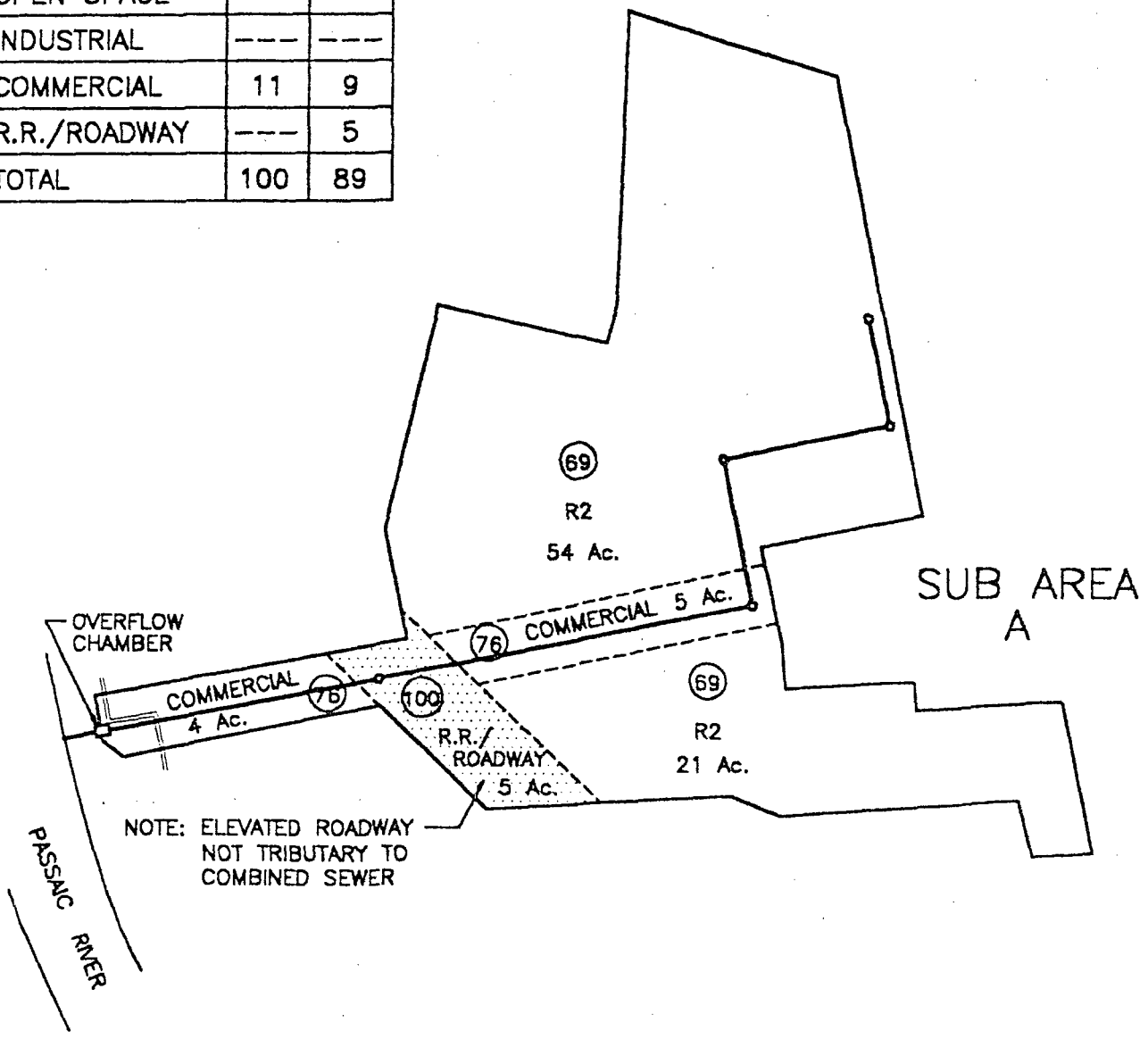
Sampler #354, Set #16
O.F. #012/H - 003

24 samples

BASELINE

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.3	180	180	100.0	456	96	21.0	216	47.4
2	7.4	310	256	82.7	460	132	28.7	263	59.3
3	7.4	226	190	84.1	472	120	25.5	231	49.0
4	7.3	198	166	83.9	380	100	26.3	216	56.8
5	7.5	190	182	95.8	352	90	25.6	231	65.7
6	7.4	210	184	87.7	416	110	26.5	306	73.5
7	7.5	196	140	71.5	388	100	25.8	240	61.9
8	7.3	192	168	87.6	444	125	28.2	225	50.7
9	7.6	340	304	89.5	528	144	27.3	240	45.5
10	7.3	248	204	82.3	516	156	30.2	294	57.0
11	7.1	192	162	84.5	352	110	31.3	236	67.1
12	7.5	182	142	78.1	336	105	31.3	170	50.7
13	7.3	170	148	87.1	284	80	28.1	168	59.2
14	7.3	164	138	84.2	236	76	32.2	162	68.7
15	7.4	160	136	85.0	180	56	31.1	93	51.6
16	7.4	150	126	84.0	172	44	25.5	81	47.1
17	7.6	132	98	74.2	84	28	33.4	48	57.2
18	7.5	108	90	83.3	72	24	33.4	46	63.8
19	7.5	120	76	63.3	52	22	42.3	---	----
20	7.3	108	86	79.6	88	28	31.8	---	----
21	7.5	148	120	81.2	168	52	30.9	42	25.0
22	7.5	242	204	84.3	412	121	32.0	192	46.7
23	7.7	276	228	82.7	448	196	43.8	222	49.5
24	7.6	204	160	78.4	388	124	38.8	224	57.8
							30.5		55.1

LAND USE	%	ACRES
R3	---	---
R2	89	75
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	11	9
R.R./ROADWAY	---	5
TOTAL	100	89



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
HARRISON AVENUE OVERFLOW
TOWN OF HARRISON

Killam
Associates • Consulting Engineers

946190042

FIGURE H-003

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

DEY STREET, HARRISON
H-004

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

DEY STREET OVERFLOW CHAMBER, HARRISON

This overflow chamber serves an extremely small tributary area of only 6 acres, which is served entirely by combined sewers. The dry weather average daily flow is nominal, estimated to be about 0.09 MGD in the dry weather months and about 0.12 MGD in wet weather months.

Metering facilities were maintained in this chamber for the period beginning June 5, 1975 and extending through July 6, 1975. Rainfalls occurred on ten occasions, with overflows observed on six occasions. It is estimated that overflow could occur from 40 to 55 times per year at this chamber, based upon the probability that rainfalls may occur from 70 to 90 times per year.

It was found that a rainfall intensity of about 0.07 to 0.08 inches per hour was required to cause overflow. The overflow volume is nominal, with a maximum of 0.3 MG measured during this observation period, and a maximum peak storm overflow rate of about 8 MGD recorded.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

It was found that the dry weather flow waste reflected a very high degree of dilution. For example, the BOD was found to be only about 25 mg/l.

Likewise, the sampling of the storm flow reflected suspended solids of only 25 mg/l. It would appear that this district has a tremendous amount of infiltration, although for a very small area (six acres), and the characteristics of the waste reflect this entry of infiltration into the system.

The area tributary to this overflow is small. A separate sanitary sewer is recommended for connection to the PVSC branch interceptor, with elimination of this combined overflow.

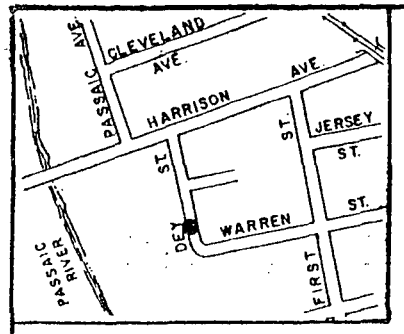
OVERFLOW DATA EXTRACT

DEY STREET OVERFLOW CHAMBER

HARRISON

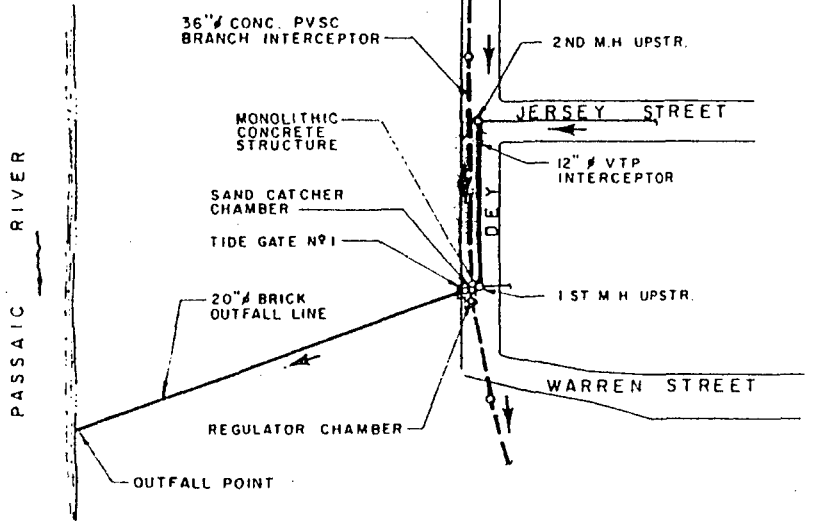
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some domestic (residential) sewage
Overflow Location (See Plate A):	in west side of Dey St. south of intersection of Dey St. and Jersey St.
District Outlet Sewer (See Plates A and B):	12" diameter VTP sewer
Outfall to River (See Plates A and B):	20" diameter brick sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharges observed at times due to capacity limitations and/or tide gate closure
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

SCALE IN FEET



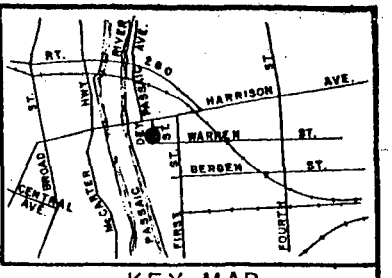
PLAN

SCALE IN FEET

NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND

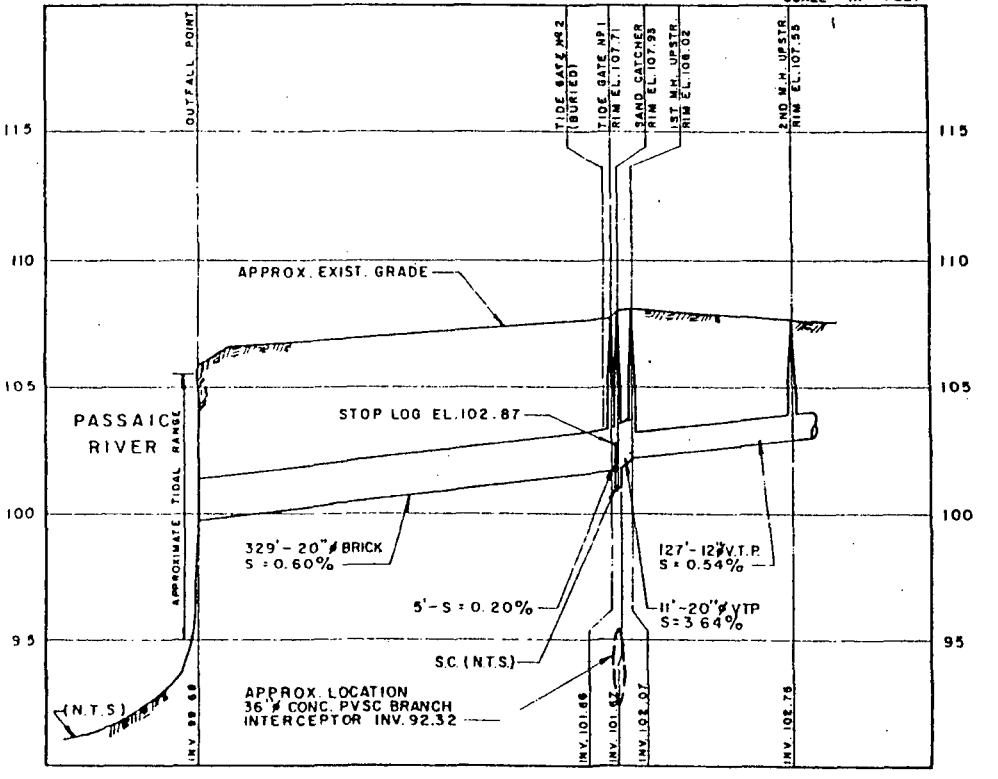
- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



KEY MAP

2000 1000 0 2000

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1864 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-004

DEY STREET, HARRISON

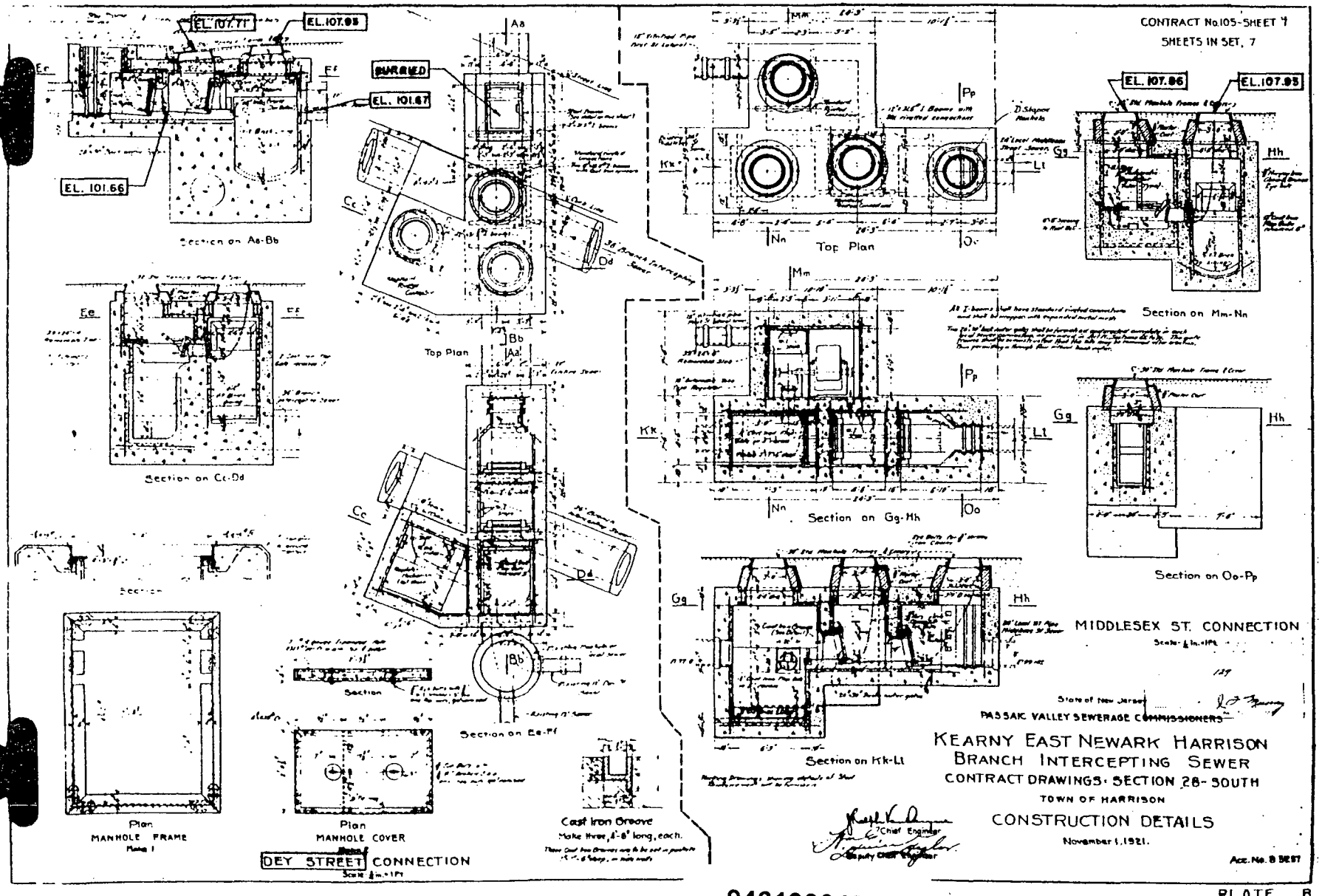
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A

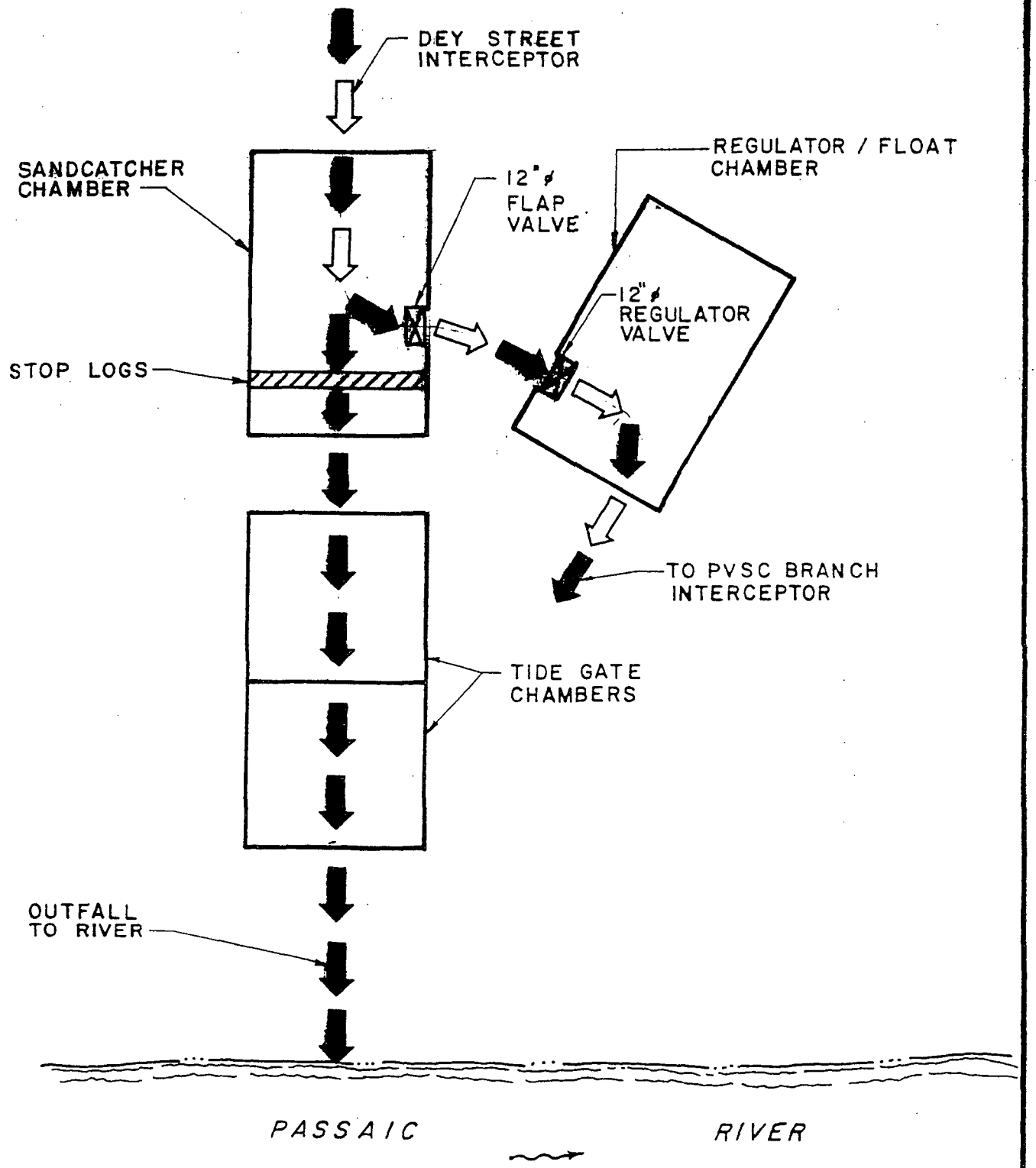
946190047



(3)

946190048

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DEY STREET, HARRISON

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190049

PLATE C

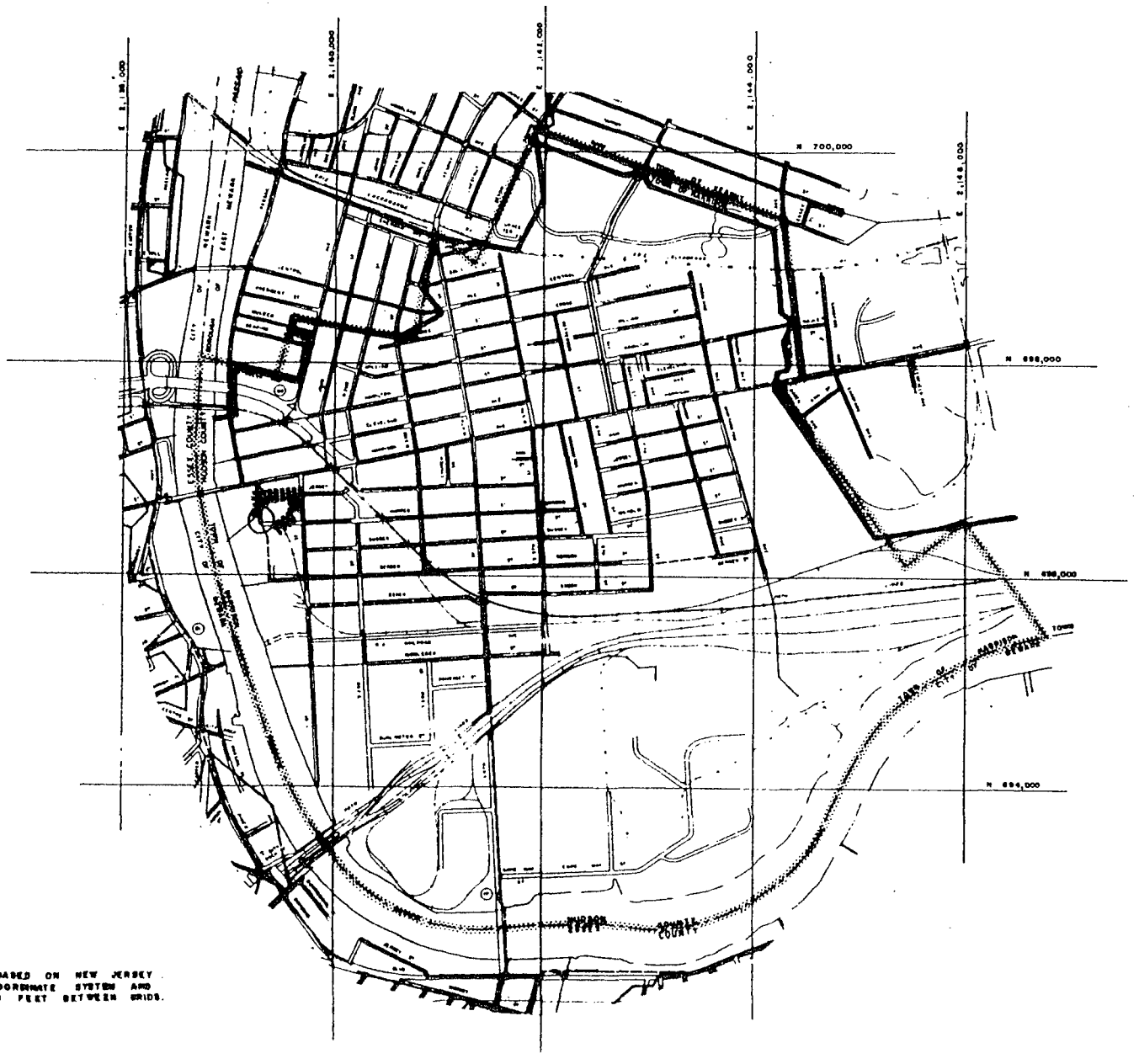
DEY STREET OVERFLOW CHAMBER H-004 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in downstream end of sand catcher just before opening to first tide gate chamber
Tide Gate Condition:	first tide gate leaking; second tide gate not accessible due to buried manhole cover

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.009 square miles-6 acres
Average Daily Flow	
Seasonal Dry Weather:	0.09 MGD (estimated)
Seasonal Wet Weather:	0.12 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	2.9 MGD
Approximate Length of Combined Sewers Serving District:	800 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- DEY STREET OVERFLOW CHAMBER
- DEY STREET COLLECTION SYSTEM

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS 2000 FEET BETWEEN GRIDS.

SCALE IN FEET

946190051

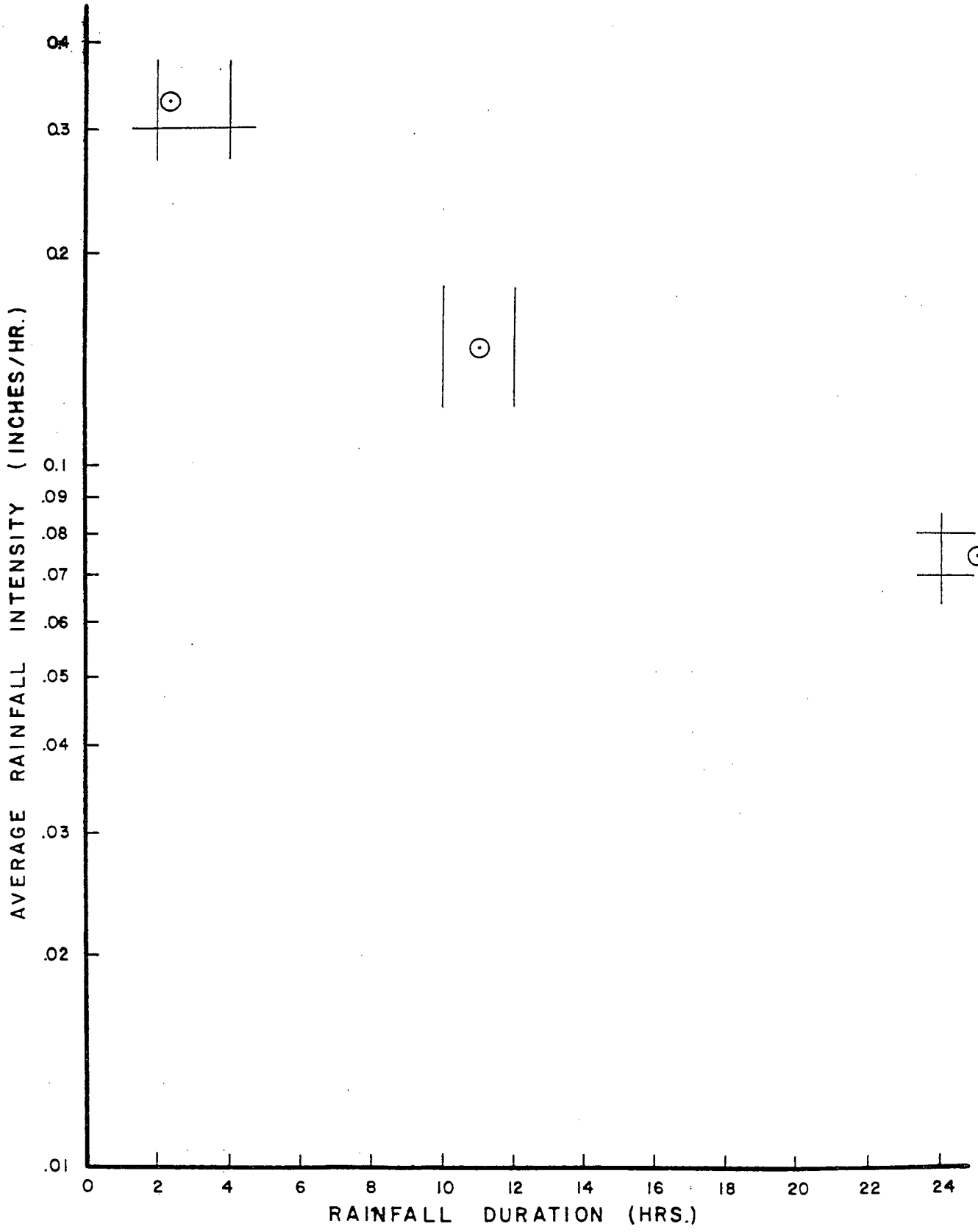
PASSAIC VALLEY SEWERAGE COMMISSIONERS

DEY STREET, HARRISON

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D



LEGEND

⊙ OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DEY STREET, HARRISON

AVERAGE RAINFALL INTENSITY

VS.

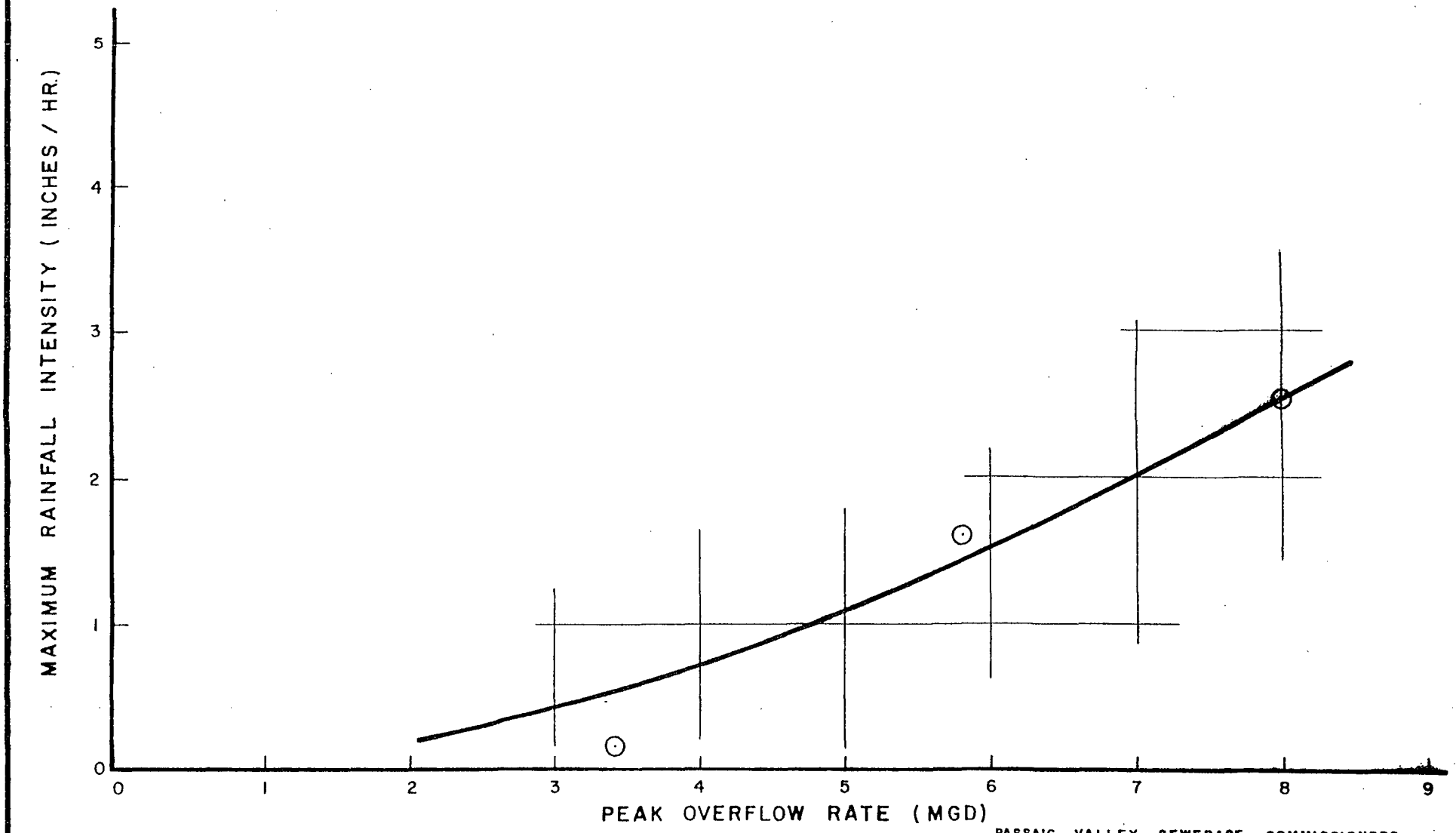
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190052

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DEY STREET, HARRISON

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 45 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

946190053

PVSC Reference # F-78

Date: 6-4-75

Elson T. Killam Associates - Infiltration Studies
Dey Street, Harrison - Sandcatcher
14:50 6-2-75 to 14:50 6-3-75

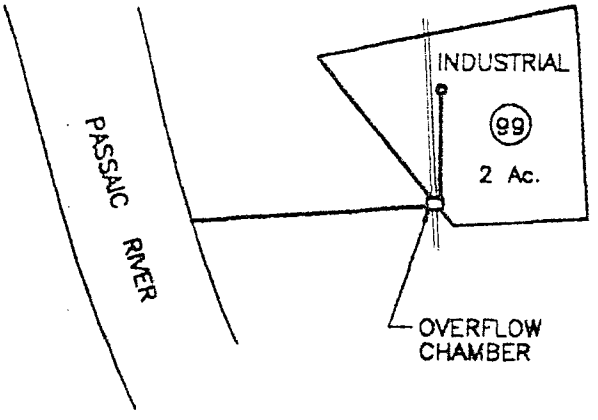
Sample No 305 Set No 18
Chamber No. 013/H-004

BASE LINE

24 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	6.5	4	-	-	148	39	26.3	85	57.3
2	6.9	0	-	-	60	15	25.0	18	30.0
3	6.8	0	-	-	64	13	20.3	50	78.2
4	6.9	0	-	-	64	11	17.2	8	12.5
5	7.2	0	-	-	56	13	23.2	31	55.3
6	7.5	0	-	-	52	13	25.0	22	42.3
7	7.6	0	-	-	56	13	23.2	22	39.3
8	7.5	0	-	-	44	13	29.6	4	9.1
9	7.5	0	-	-	44	14	31.8	24	54.5
10	7.6	0	-	-	48	13	27.1	14	29.2
11	7.6	0	-	-	36	14	38.9	12	33.3
12	7.5	0	-	-	32	12	37.5	21	65.6
13	7.4	0	-	-	40	12	30.0	9	22.5
14	7.3	0	-	-	56	9	16.1	33	59.0
15	7.0	0	-	-	44	10	22.7	17	38.7
16	7.0	0	-	-	40	9	22.5	7	17.5
17	7.0	4	-	-	72	20	27.8	23	31.9
18	7.0	0	-	-	92	26	28.3	30	32.6
19	7.0	0	-	-	80	26	32.5	26	32.5
20	7.0	0	-	-	76	30	39.5	29	38.1
21	7.5	0	-	-	84	29	34.5	25	29.8
22	7.5	0	-	-	84	27	32.1	19	22.6
23	7.6	0	-	-	72	25	34.7	17	23.6
24	7.4	0	-	-	52	18	34.7	31	59.7
							28.4		38.1

LAND USE	%	ACRES
R3	---	---
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	100	2
COMMERCIAL	---	---
TOTAL	100	2



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
DEY STREET OVERFLOW
TOWN OF HARRISON

Killam
Associates Consulting Engineers

946190055

FIGURE H-004

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

MIDDLESEX STREET, HARRISON
H-005

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 46 ESSEX STREET MILLBURN NEW JERSEY 07041

MIDDLESEX STREET OVERFLOW CHAMBER, HARRISON

The Middlesex Street overflow chamber serves a drainage area of 62 acres. This drainage area is served with combined sewers.

The estimated dry weather flow in this district is about 0.72 MGD during dry weather months, and during the wet weather months is about 0.98 MGD, reflecting a possible infiltration rate of about 0.26 MGD.

Metering facilities were installed on April 24, 1975 and were maintained through July 6, 1975. During this period of time, 25 rainfalls were recorded and overflows were estimated to have occurred on 17 occasions. It was found that a rainfall intensity of about 0.07 to 0.08 inches per hour usually caused overflow, but lesser intensities sometimes caused overflow if the rainfall duration was protracted. The maximum overflow rate which was measured was about 14 MGD, and the overflow volume was found to be 0.5 MG. It has been estimated that overflows will occur at this chamber about 50 to 60 times per year when rainfall occurrences range from 70 to 90 times per year.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

The sampling of the dry weather flow revealed an extremely dilute sewage. The suspended solids was found to be only about 42 mg/l and the BOD about 44 mg/l, based on average values.

A sampling of the storm flow waste showed that the suspended solids ranged from a low of 32 mg/l to a high of 59 mg/l, and the BOD ranged from a low of 9 mg/l to a high of 50 mg/l, reflecting again not only the very dilute dry weather flow, but the further effect of dilution during storm flows.

ELSON T. KILLAM ASSOCIATES, INC.

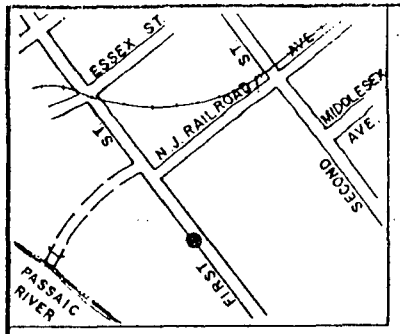
OVERFLOW DATA EXTRACT

MIDDLESEX STREET OVERFLOW CHAMBER

HARRISON

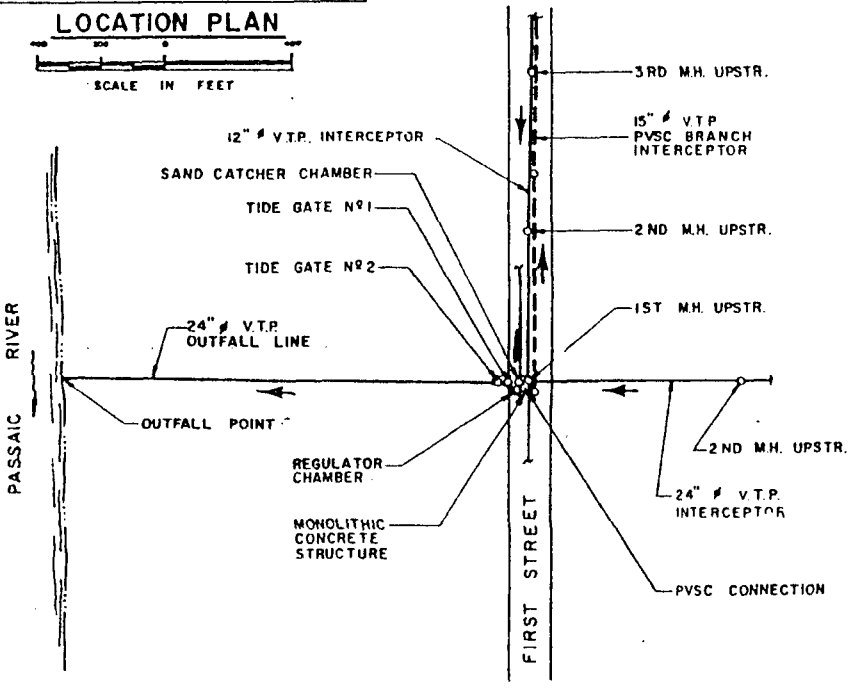
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some residential development
Overflow Location (See Plate A):	in west side of First Street, 150 feet south of Otis Elevator Co. main gate
District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed due to capacity limitations and/or tide gate closure
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

SCALE IN FEET



PLAN

SCALE IN FEET

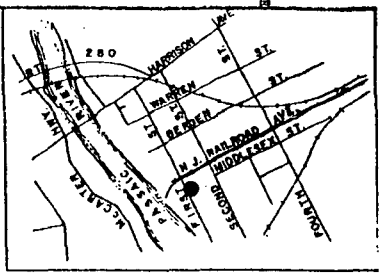
ALL ELEVATIONS BASED ON B.M. Nº 1269 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

NOTE

ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

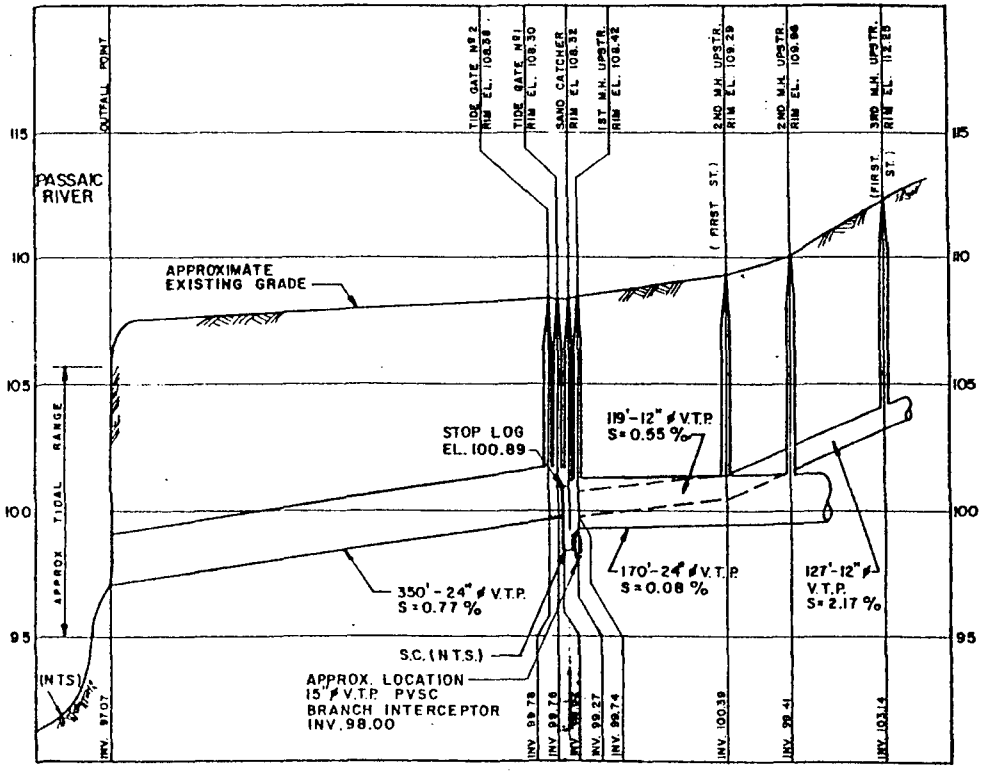
LEGEND

→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATE
UP STR. = UPSTREAM
DN. STR. = DOWNSTREAM
N.T.S. = NOT TO SCALE
V.T.P. = VITRIFIED TILE PIPE
● = OVERFLOW LOCATION



KEY MAP

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-005

MIDDLESEX STREET, HARRISON

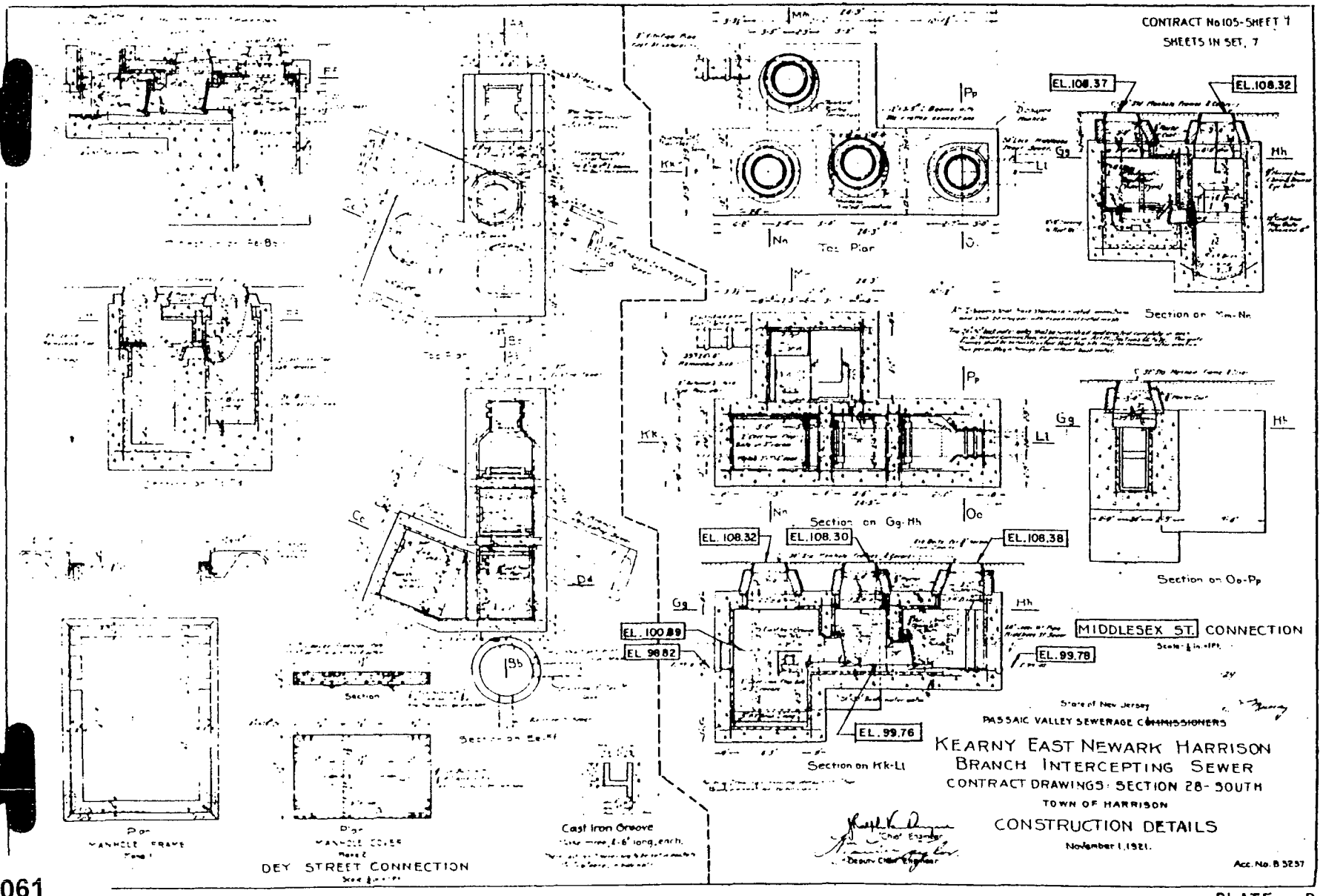
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

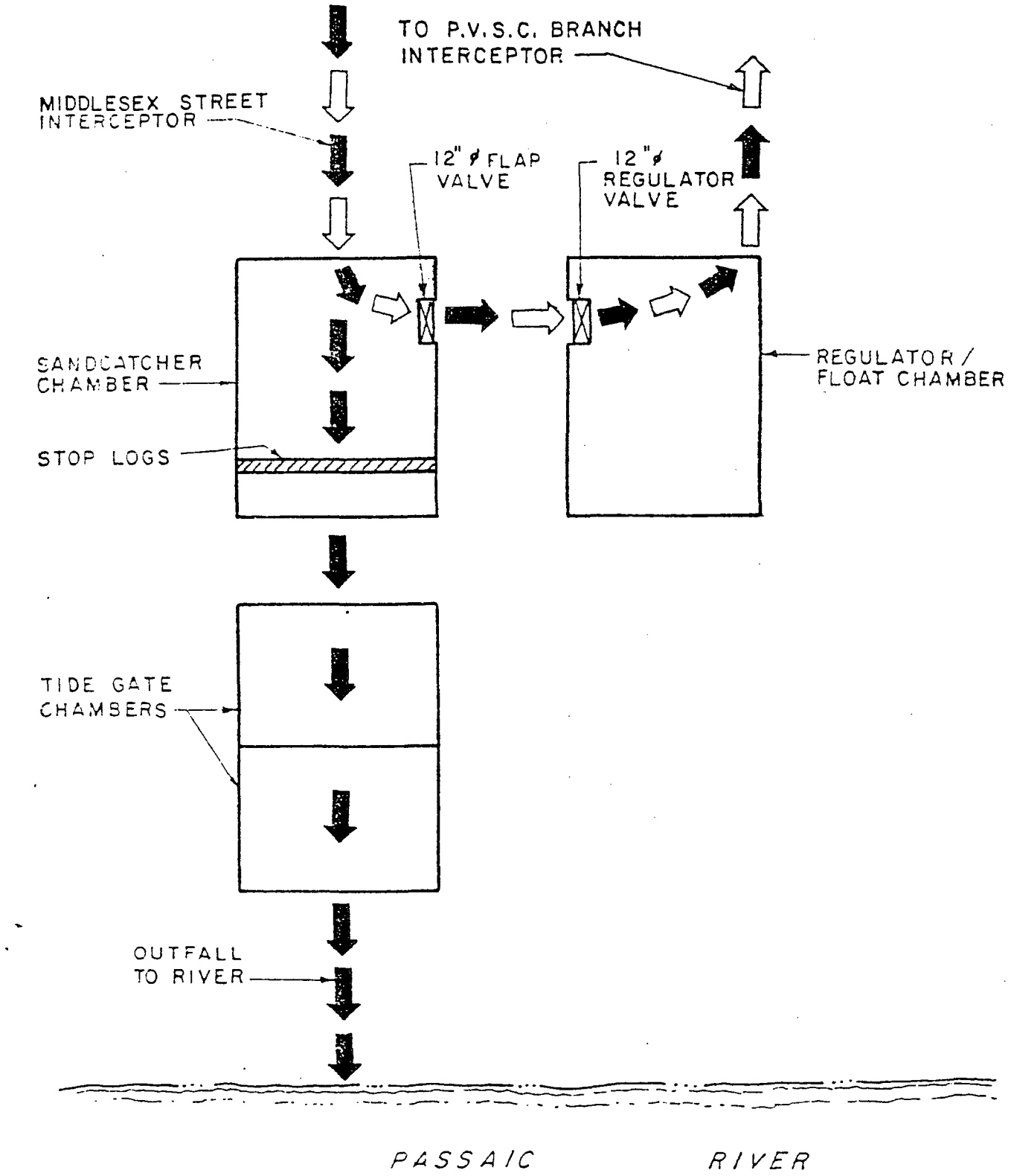
PLATE A

946190060



946190061

PLATE B



PASSAIC VALLEY SEWERAGE COMMISSIONERS

MIDDLESEX STREET, HARRISON

SCHEMATIC

LESON T. KELLAM ASSOCIATES, INC.

946190062

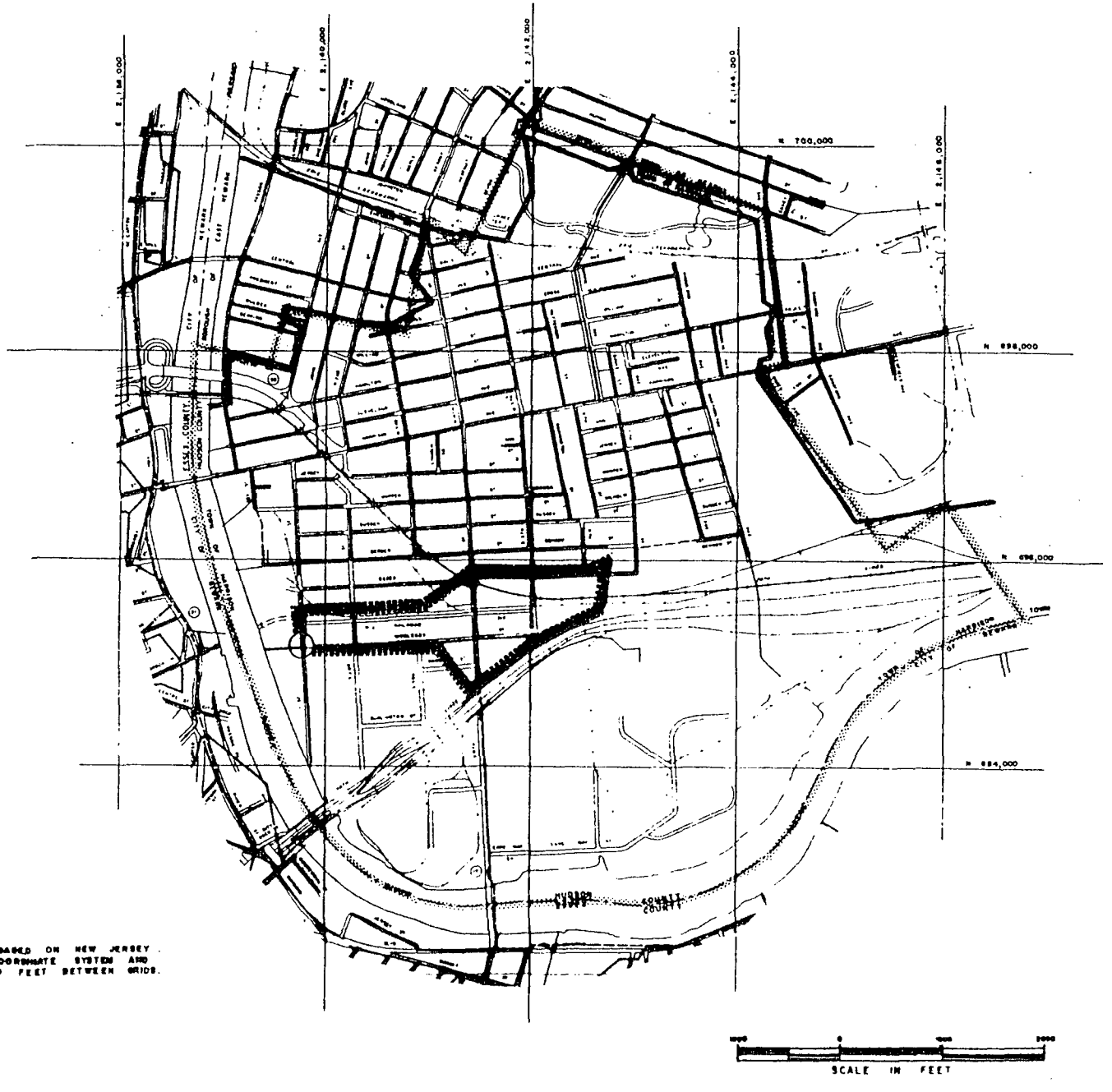
PLATE C

MIDDLESEX STREET OVERFLOW CHAMBER H-005 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in downstream end of sand catcher just before opening to first tide gate chamber
Tide Gate Condition:	both tide gates noted as leaking
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.097 square miles-62 acres
Average Daily Flow Seasonal Dry Weather: Seasonal Wet Weather:	 0.72 MGD (estimated) 0.98 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	3.6 MGD
Approximate Length of Combined Sewers Serving District:	5,800 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- MIDDLESEX STREET OVERFLOW CHAMBER
- MIDDLESEX STREET COLLECTION SYSTEM

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

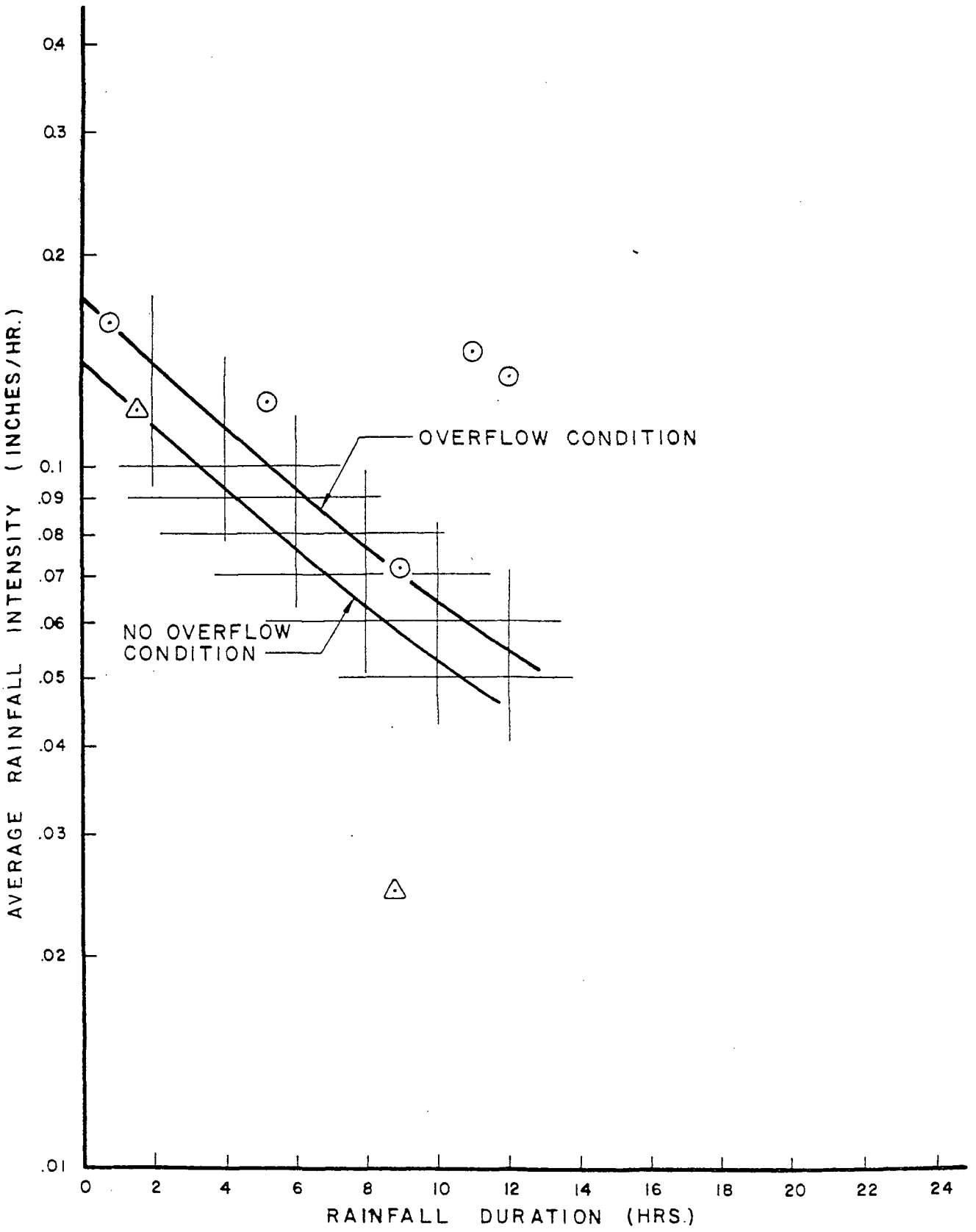
MIDDLESEX STREET, HARRISON

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers

PLATE D

946190064



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MIDDLESEX STREET, HARRISON

AVERAGE RAINFALL INTENSITY

VS.

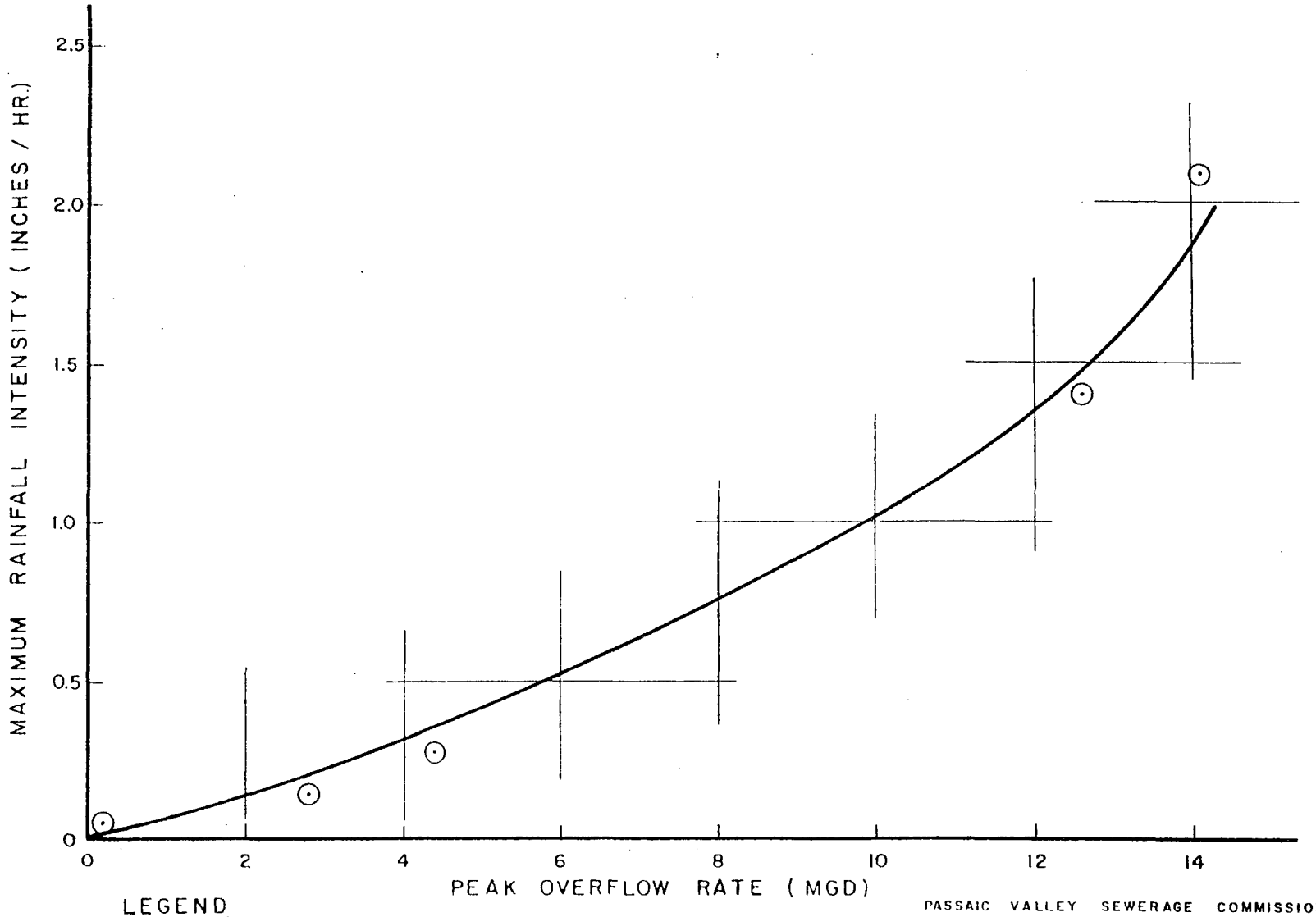
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190065

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MIDDLESEX STREET, HARRISON

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

946190066

PVSC Reference # B-40

Date: 2/13/75

Elson T. Killam Associates - Infiltration Studies
Middlesex Street, Harrison, In sandcatcher
1450-2/11/75 to 1140 -2/12/75

Sampler#354 Set #4
O.F. # 014/H-005

19 Samples

Baseline

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.5	104	4	38.5	216	60	27.8	167	77.3
2	7.7	114	22	19.3	110	28	25.4	83	75.4
3	7.8	36	36	100.0	102	20	19.6	85	83.3
4	7.6	38	38	100.0	90	28	31.1	36	40.0
5	7.5	42	42	100.0	61	15	24.6	24	39.4
6	7.6	14	14	100.0	65	12	18.5	41	63.2
7	7.7	0	--	-----	61	17	27.9	30	49.2
8	7.7	14	14	100.0	53	12	22.7	16	30.2
9	7.7	62	62	100.0	76	11	14.5	28	36.9
10	7.7	32	32	100.0	57	15	26.3	35	61.4
11	7.8	0	---	----	53	13	24.5	37	69.8
12	7.8	34	34	100.0	45	15	33.3	12	26.7
13	7.9	54	0	0.0	41	13	31.7	20	48.8
14	7.9	28	28	100.0	45	10	21.2	15	33.3
15	7.9	28	28	100.0	37	10	27.0	21	56.8
16	8.0	24	24	100.0	24	14	58.3	15	62.5
17	7.9	0	--	----	33	10	30.3	13	39.4
18	8.0	12	12	100.0	82	19	23.2	69	84.1
19		NO SAMPLE							
20		NO SAMPLE							
21	8.0	32	32	100.0	121	30	24.8	95	78.5
							27.0		55.6

P.V.S.C. Reference # K-128

Date November 27, 1974

Elson Killam Associates-Infiltration Studies

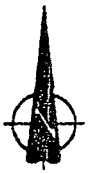
Otis Elevator CO., Middlesex Street, Harrison. First manhole upstream Sancatcher 2:37 P. M. 11/15/74 to 1:17 A. M. 11/26/74

BASELINE

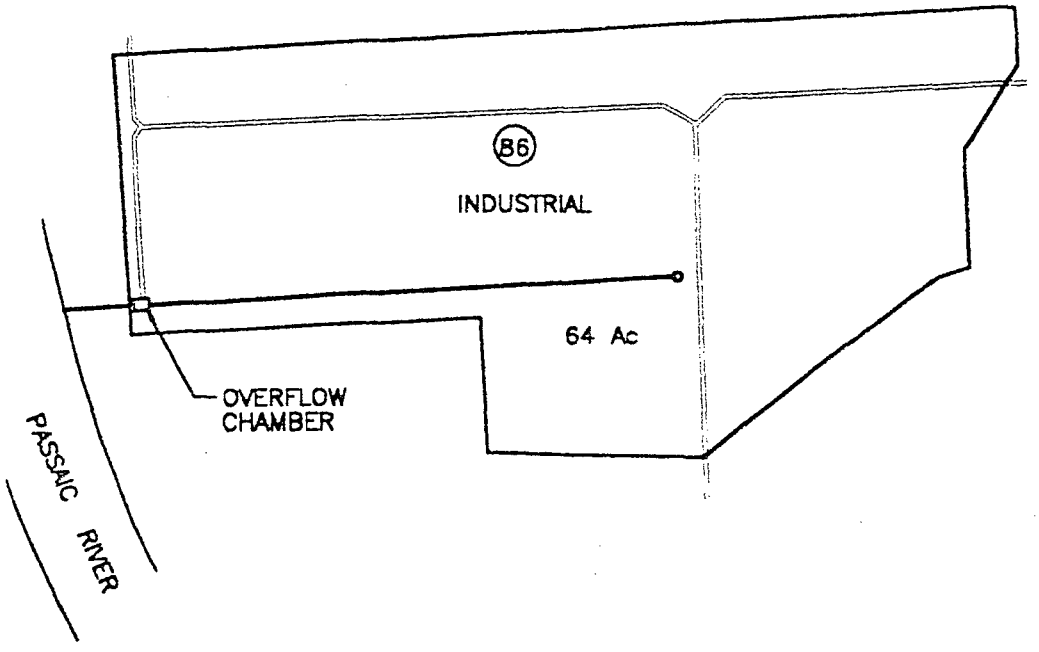
Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./ C.O.D.	B.O.D	B.O.D/ C.O.D.
1	7.5	12	12	100.0	120	38	31.7	108	90.0
2	7.5	16	16	100.0	164	48	29.3	100	61.0
3	2.6	48	40	83.3	312	60	19.2	45	14.4
4	2.1	4	4	100.0	92	36	39.1	22	23.9
5	6.5	28	26	92.9	108	25	23.1	52	48.1
6	6.9	16	16	100.0	112	25	22.3	64	57.1
7	7.0	8	8	100.0	92	19	20.7	69	75.0
8	7.0	22	22	100.0	64	15	23.4	60	----
9	7.2	16	16	100.0	68	15	22.1	24	35.3
10	7.3	12	12	100.0	124	16	12.9	69	55.6
11	7.2	268	212	79.1	264	56	21.2	143	54.2
1/3 Fill 12	7.6	16	16	100.0	92	38	41.3	87	94.6
				AVERAGE			25.5		

946190068

LAND USE	%	ACRES
R3	---	---
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	100	64
COMMERCIAL	---	---
TOTAL	100	64



SUB AREA A



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
MIDDLESEX STREET OVERFLOW
TOWN OF HARRISON

946190069

Killam Associates • Consulting Engineers

FIGURE H-005

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

BERGEN STREET, HARRISON

H-006

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

BERGEN STREET OVERFLOW CHAMBER, HARRISON

This overflow chamber serves a drainage area of about 72 acres. The area is served with combined sewers. It has been estimated that the dry weather flow is about 0.83 MGD during the dry weather months, and that the average daily flow is about 1.13 MGD during wet weather months, reflecting possible infiltration of about 0.30 MGD.

Metering facilities were installed in this chamber starting July 6, 1975, and were maintained in operation through September 12, 1975. During this period of time, thirteen rainfalls were recorded and it has been estimated that overflows occurred on eleven occasions. Based on an estimated range of from 70 to 90 rainfalls occurring during the year, it is estimated that overflow would occur at this chamber about 60 to 75 times.

It was found that a rainfall of intensity of about 0.09 inches per hour was experienced before overflow would occur at this chamber. The maximum overflow rate was found to be about 17 MGD, and the volume of overflow during the storm of most severe intensity was found to be only 0.5 MG.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

Samples of the dry weather flow indicated an average sewage strength for suspended solids of 136 mg/l and for BOD the average concentration was about 170 mg/l. The sampling of the overflow during

storm or rainfall conditions indicated that suspended solids ranged from a low of 100 mg/l to a high of 144 mg/l and BOD concentrations ranged from a low of 23 mg/l to a high of 37 mg/l, reflecting the dilution effect.

ELSON T. KILLAM ASSOCIATES, INC.

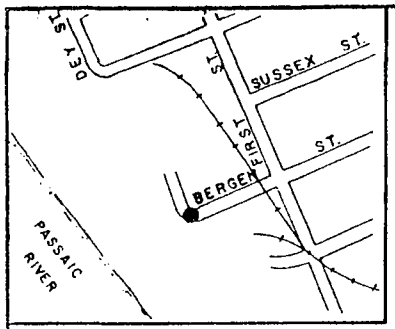
OVERFLOW DATA EXTRACT

BERGEN STREET OVERFLOW CHAMBER

HARRISON

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some residential areas
Overflow Location (See Plate A):	in center of Bergen St. at its westerly dead end before Passaic River
District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed at times due to capacity limitations and/or tide gate closures
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



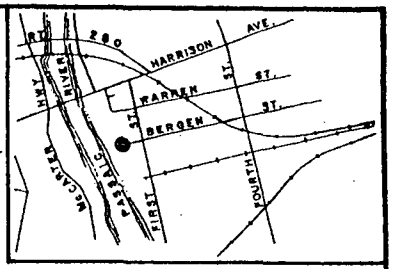
LOCATION PLAN

SCALE IN FEET

NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

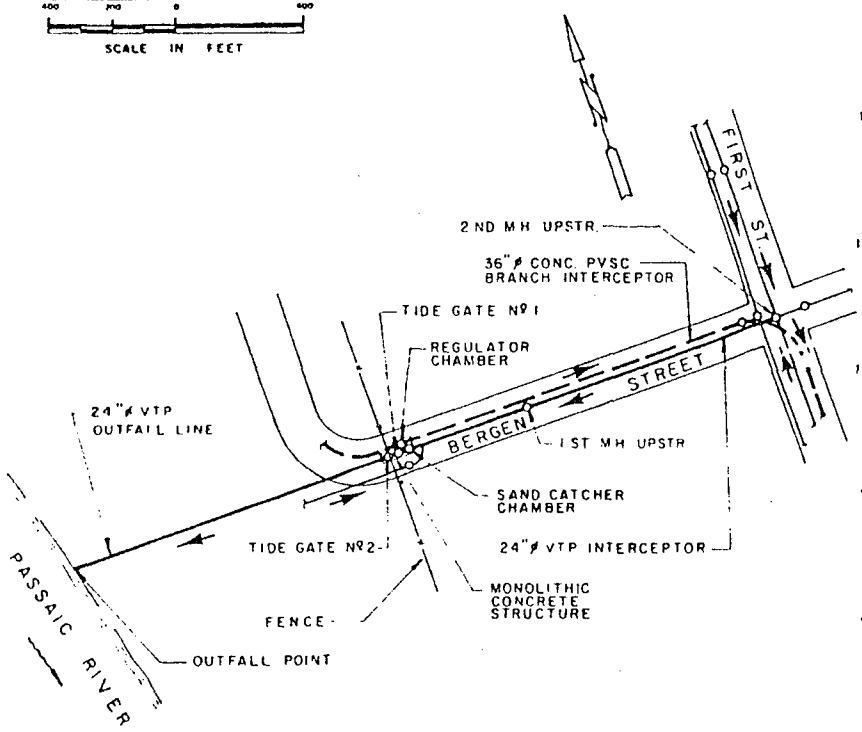
LEGEND

- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V T P = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



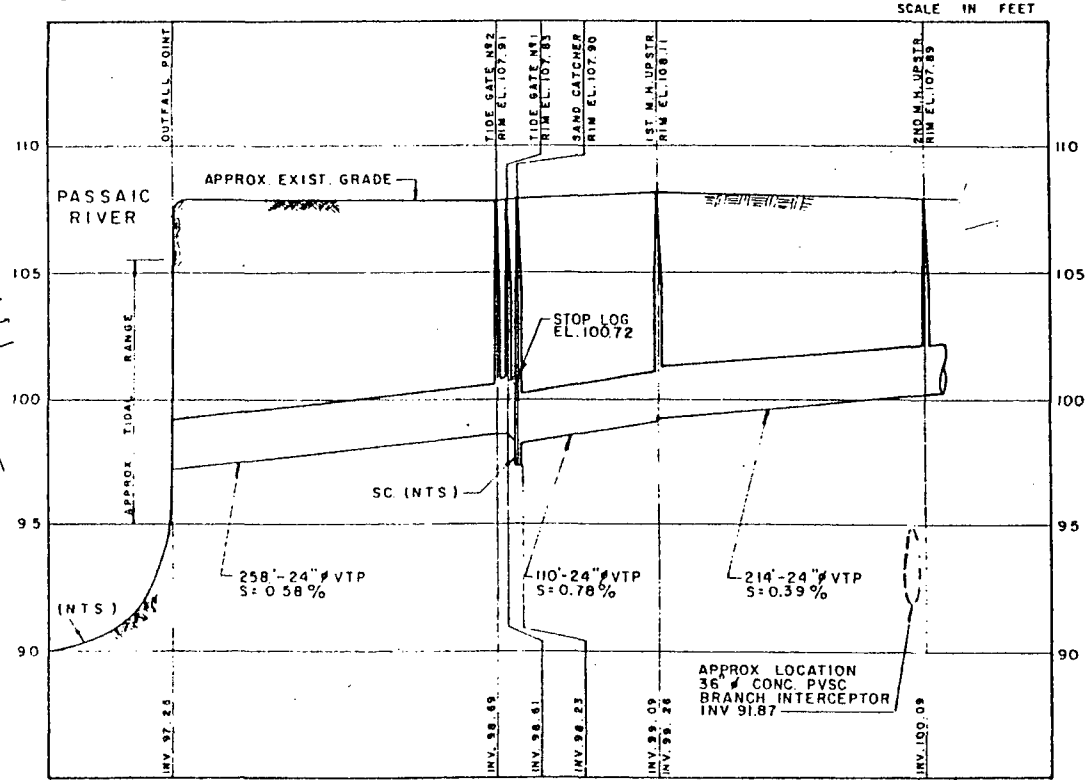
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1244 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER H-006

BERGEN STREET, HARRISON

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190074

PLATE A

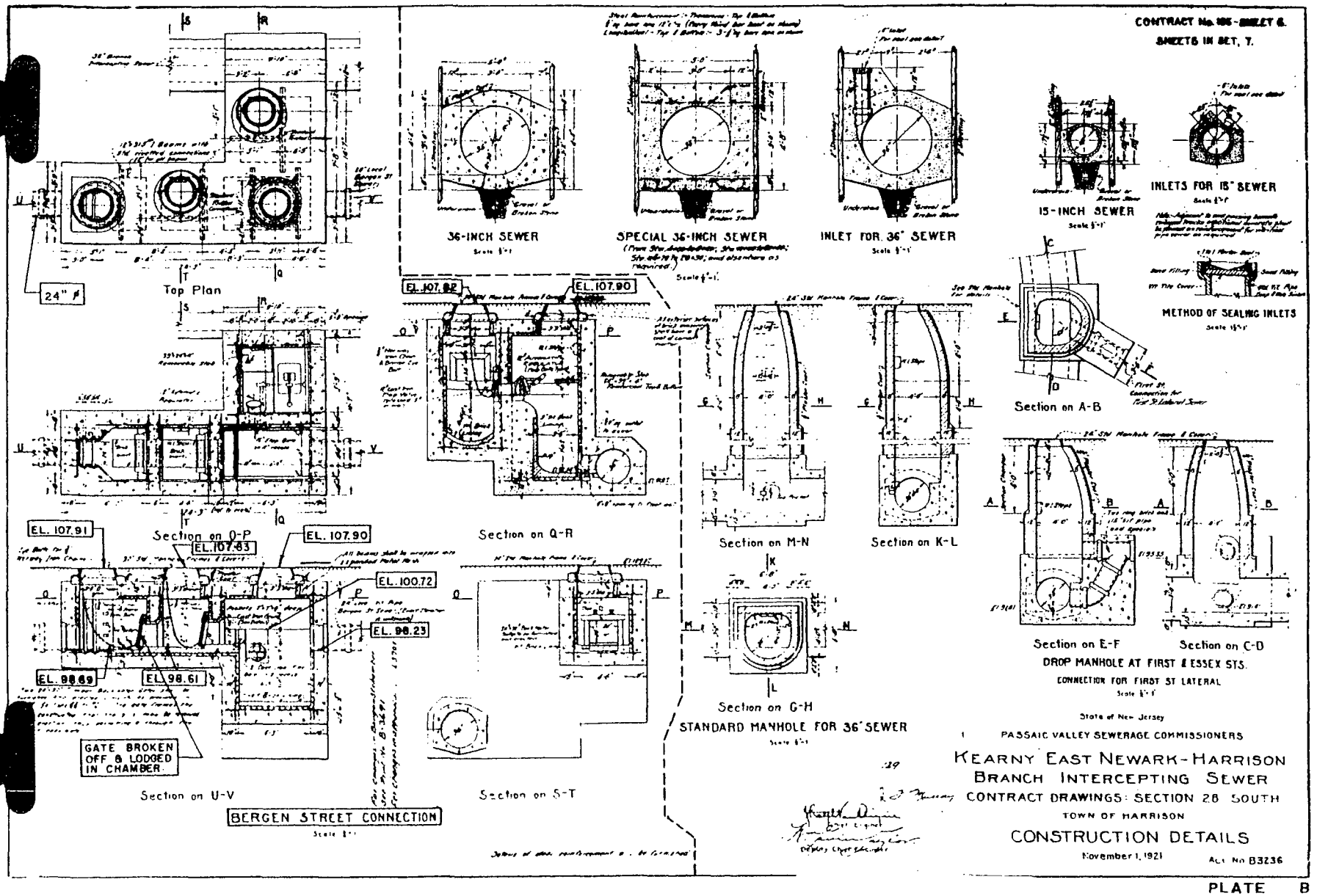
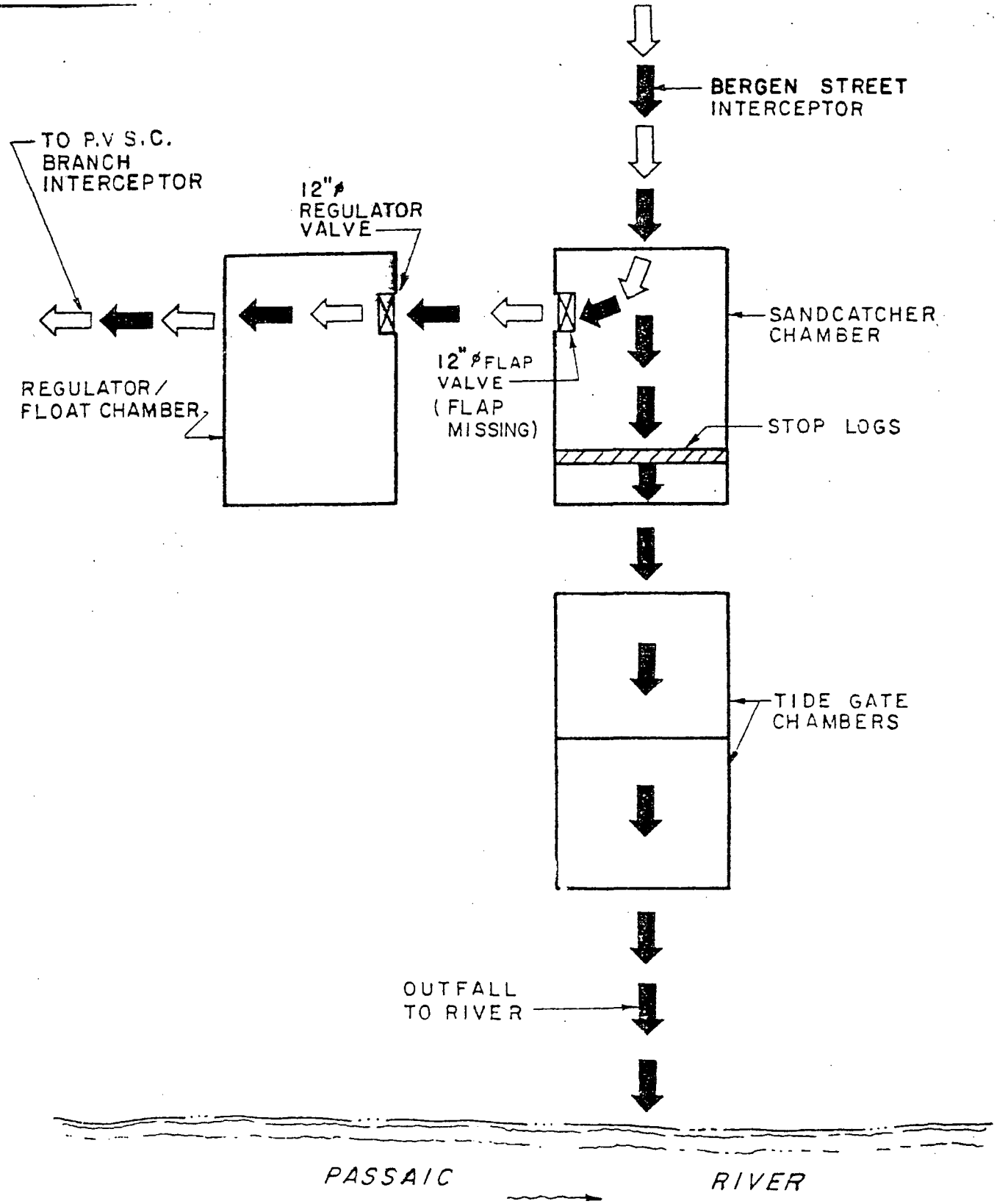


PLATE B

946190075



PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN STREET, HARRISON

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

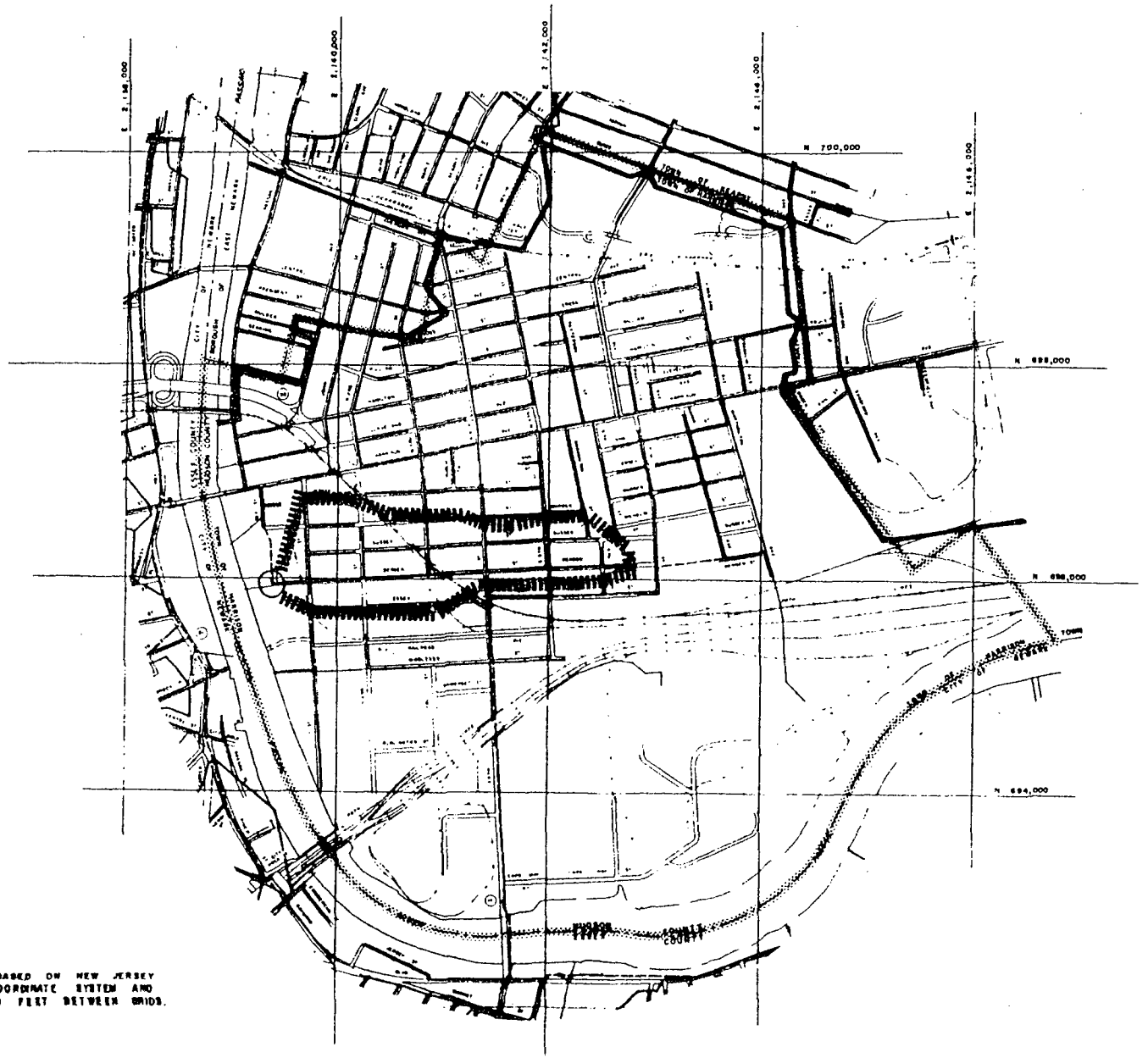
BERGEN STREET OVERFLOW CHAMBER H-006 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in downstream end of sand catcher just before opening to first tide gate chamber
Tide Gate Condition:	Tide gate No. 1 leaking. Tide gate No. 2 broken off and jammed in chamber

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.113 square miles-72 acres
Average Daily Flow	
Seasonal Dry Weather:	0.83 MGD (estimated)
Seasonal Wet Weather:	1.13 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	4.4 MGD
Approximate Length of Combined Sewers Serving District:	9,200 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVSC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- BERGEN STREET OVERFLOW CHAMBER
- BERGEN STREET COLLECTION SYSTEM

N

SCALE IN FEET

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS 2000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

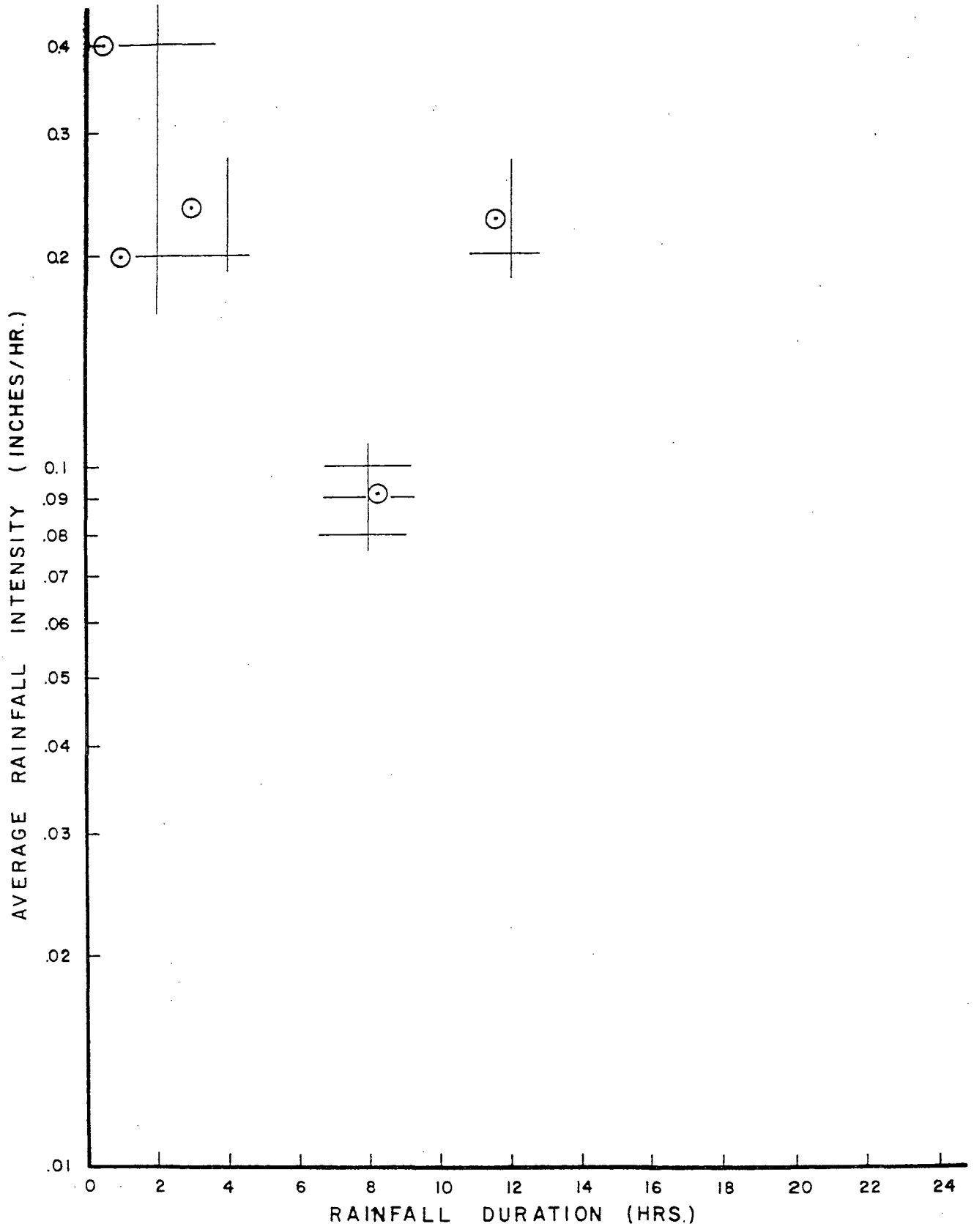
BERGEN STREET, HARRISON

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D

946190078



LEGEND

⊙ OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN STREET, HARRISON

AVERAGE RAINFALL INTENSITY

VS.

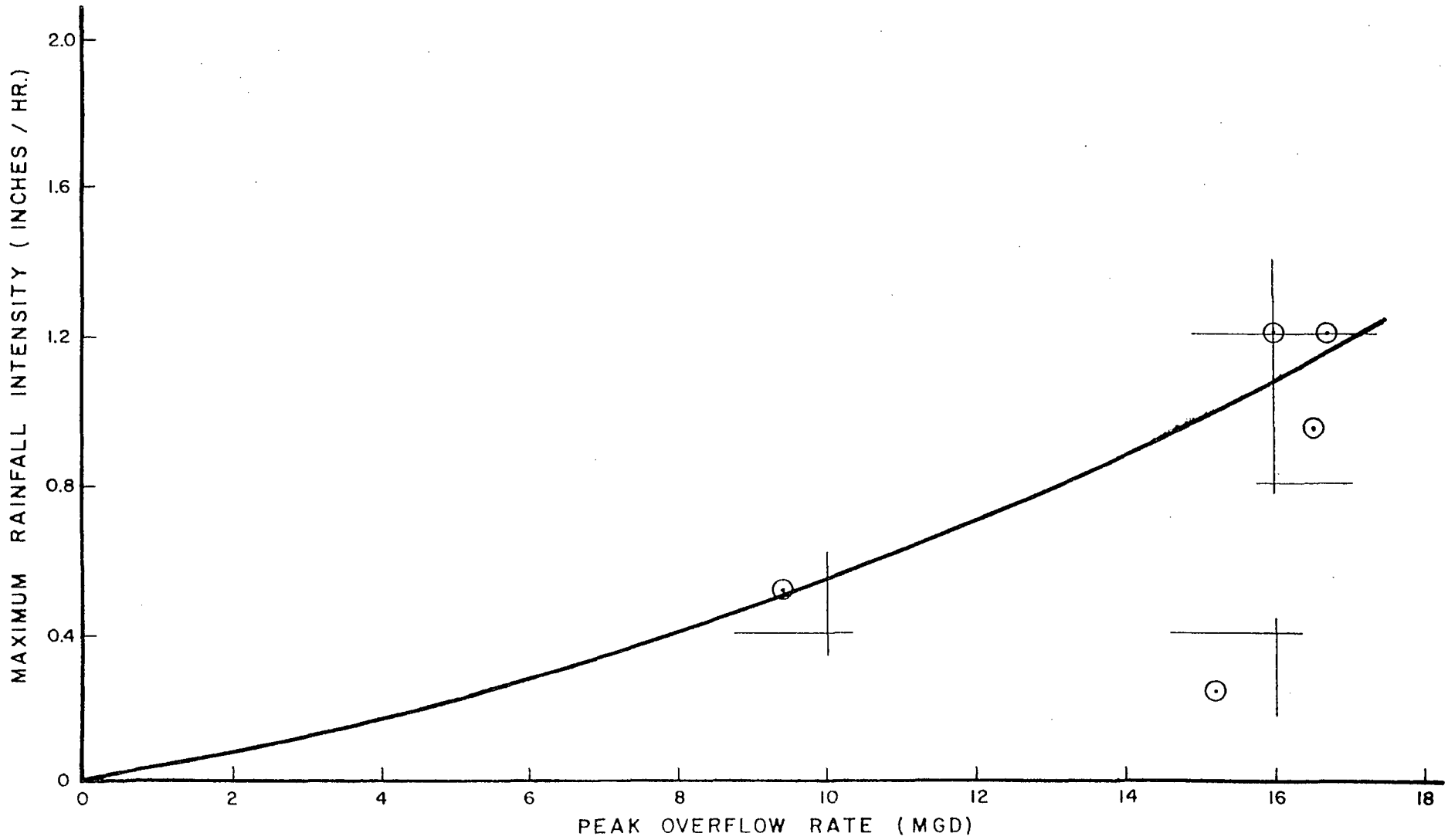
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190079

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN STREET, HARRISON

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers — 40 ESSEX STREET MILLBURN, NEW JERSEY 07041

PLATE F

946190080

P.V.S.C. Reference # L-22

Date December 4, 1974

Elson Killam Associates-Infiltration Studies Set #13

Bergen Street, Harrison, First manhole upstream from Sandcatcher

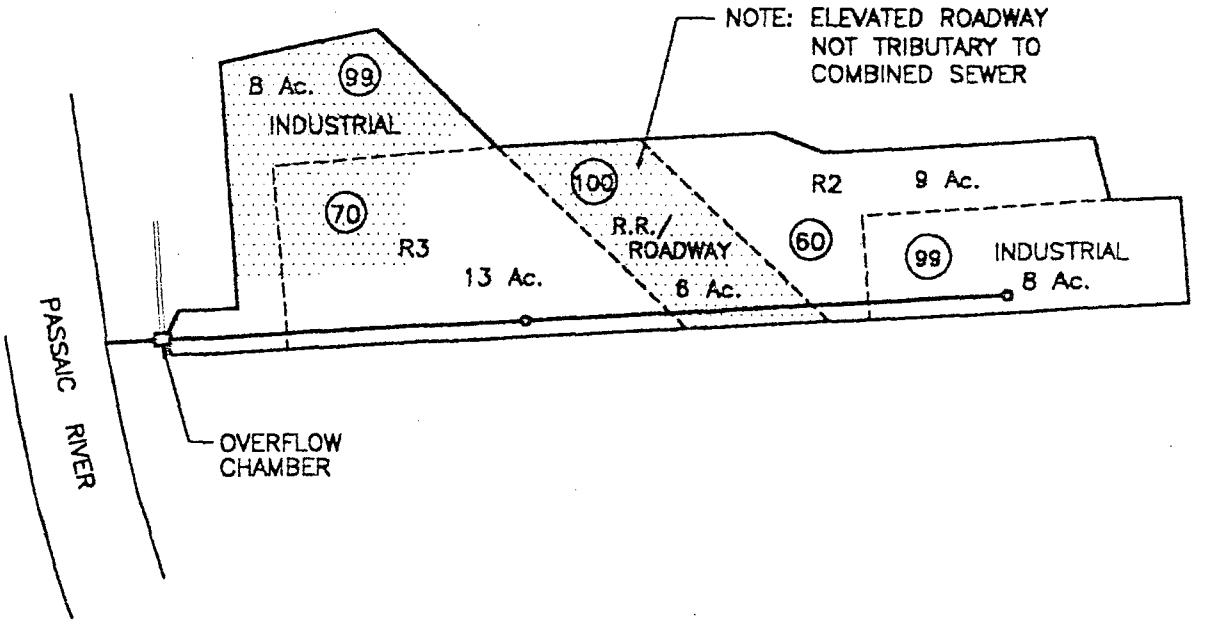
4:15 P. M. 12/2/74 to 1:30 P. M., 12/3/74

22 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	7.5	118	114	96.6	477	160	33.6	220	46.1
2	7.3	76	76	100.0	196	70	35.7	143	73.0
3	7.4	60	60	100.0	135	38	28.1	---	----
4	7.5	38	38	100.0	445	54	12.1	117	26.3
5	7.5	66	66	100.0	371	114	30.7	164	44.2
6	7.4	10	10	100.0	171	44	25.7	64	37.4
7	7.5	52	52	100.0	90	42	46.8	52	57.8
8	7.6	54	54	100.0	94	45	47.9	--	--
9	7.6	332	224	67,5	416	110	26.5	--	--
10	7.8	80	80	100.0	163	41	25.1	87	53.4
11	7.8	110	100	90.9	147	42	28.6	49	33.3
12	7.9	68	68	100.0	82	30	36.6	52	63.4
13	7.8	160	88	55.0	37	14	37.8	--	--
14	7.9	470	412	87.7	700	171	24.4	417	59.6
15	7.8	152	140	92.1	339	114	33.7	219	61.7
16	7.8	96	94	97.9	139	47	33.7	87	62.6
17	8.3	480	428	89.2	873	280	32.1	578	66.2
18	8.0	186	148	79.6	339	102	30.1	---	---
19	7.9	60	60	100.0	184	64	34.7	---	---
20	8.7	172	90	52.3	204	62	30.2	120	58.8
21	8.8	58	58	100.0	269	66	24.5	170	63.2
22	8.1	98	80	81.6	208	64	30.7	182	87.5
							31.3		

LAND USE	%	ACRES
R3	34	13
R2	24	9
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	42	16
COMMERCIAL	---	---
R.R./ROADWAY	---	6
TOTAL	100	44



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
BERGEN STREET OVERFLOW
TOWN OF HARRISON

Killam Associates Consulting Engineers

FIGURE H-006

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

WORTHINGTON AVENUE, HARRISON
H-007

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

WORTHINGTON AVENUE OVERFLOW CHAMBER, HARRISON

The Worthington Avenue overflow chamber serves a tributary area of 177 acres, of which area about 95 percent is served with combined sewers, the balance being composed of separate sanitary and storm sewers.

The average daily dry weather flow was estimated to be about 2.0 MGD during dry weather months, and about 2.8 MGD during wet weather months. This reflects a fairly high infiltration rate due to the higher ground water table during the wet weather months.

No measurable overflows were recorded at this chamber because of the fact that the outfall line, which extends some 1,350 feet into the Meadowlands, is clogged with debris. Due to the obstructed outfall line, the overflow chamber becomes surcharged during periods of storm flow, thereby negating metering attempts, since no "free board" overflow condition existed. In other words, with the occurrences of high storm flows, the stormwater is carried on downstream.

Sampling of the waste during dry weather flow conditions revealed an extremely dilute sewage, with the suspended solids averaging only about 42 mg/1. Sampling of the waste during storm flow conditions indicated that BOD concentrations averaged 59 to 75 mg/1, reflecting the dilution effect.

OVERFLOW DATA EXTRACT

WORTHINGTON AVENUE OVERFLOW CHAMBER

HARRISON

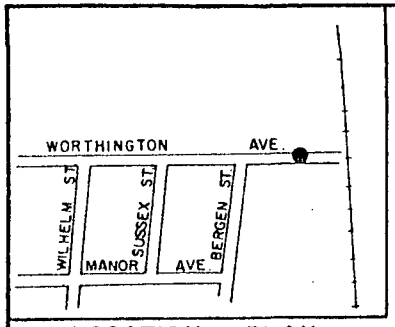
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	open ditch leading to Passaic River
Character of District Served:	primarily industrial; some residential
Overflow Location (See Plate A):	in Worthington Avenue at southerly terminus before railroad and start of meadows
District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	obstructed (1350 ft. ± in length through meadows to open ditch)
Tidal Effects:	none observed
Surcharge Effects:	surcharge observed due to outfall obstructions
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

NOTE: Overflow estimated based on outfall pipe capacity

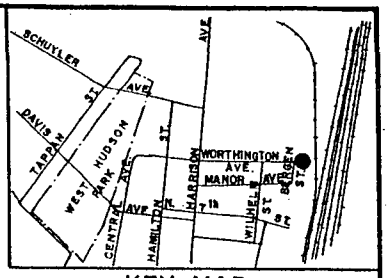
NOTES
1. ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.
2. REGULATOR IS LOCATED AT WORTHINGTON AVENUE AND HARRISON AVENUE (SEE KEY MAP)

LEGEND
- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



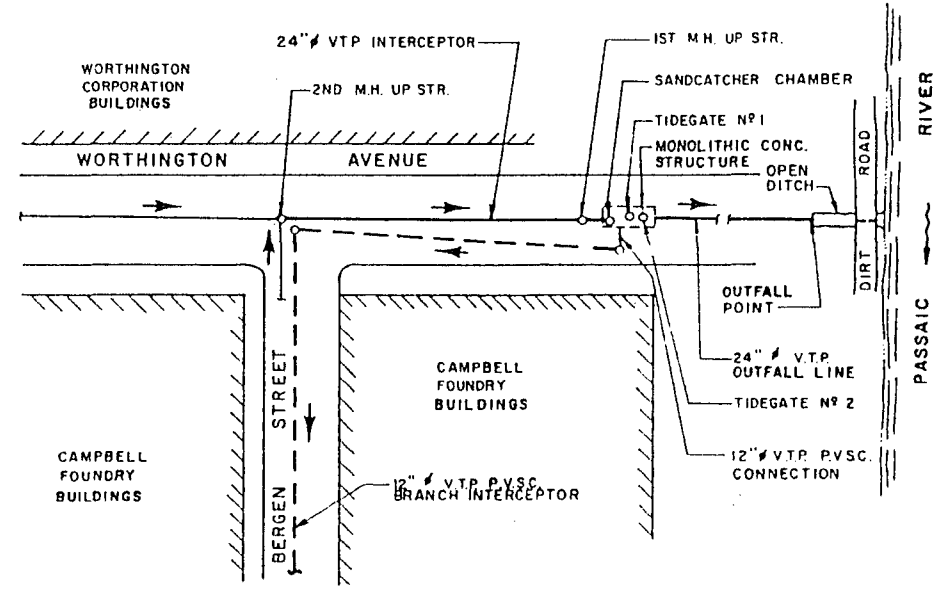
LOCATION PLAN

400 200 0 400
SCALE IN FEET



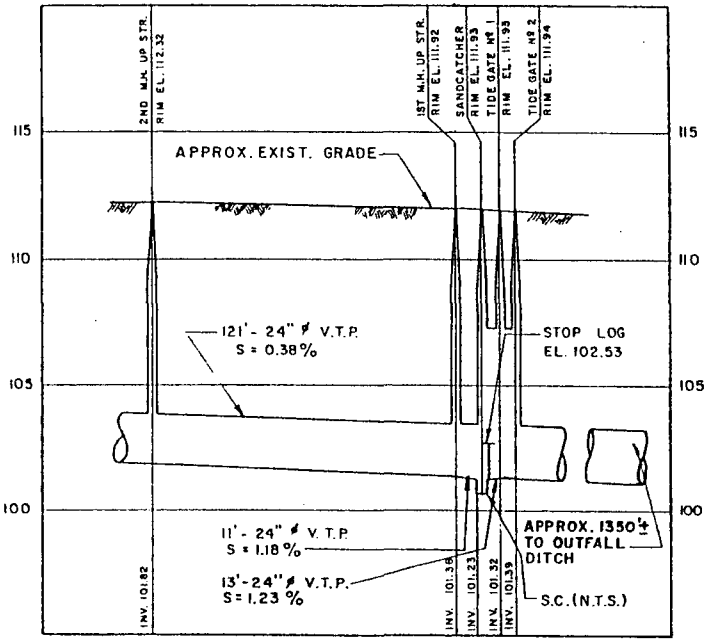
KEY MAP

2000 1000 0 2000
SCALE IN FEET



PLAN

80 0 80
SCALE IN FEET



PROFILE

50 0 50
HORIZ. SCALE IN FEET

8 0 8
VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1287 AS ESTABLISHED BY PAUL J. EMILIUS & ASSOCIATES. FOR LOCATION AND DESCRIPTION SEE APPENDIX

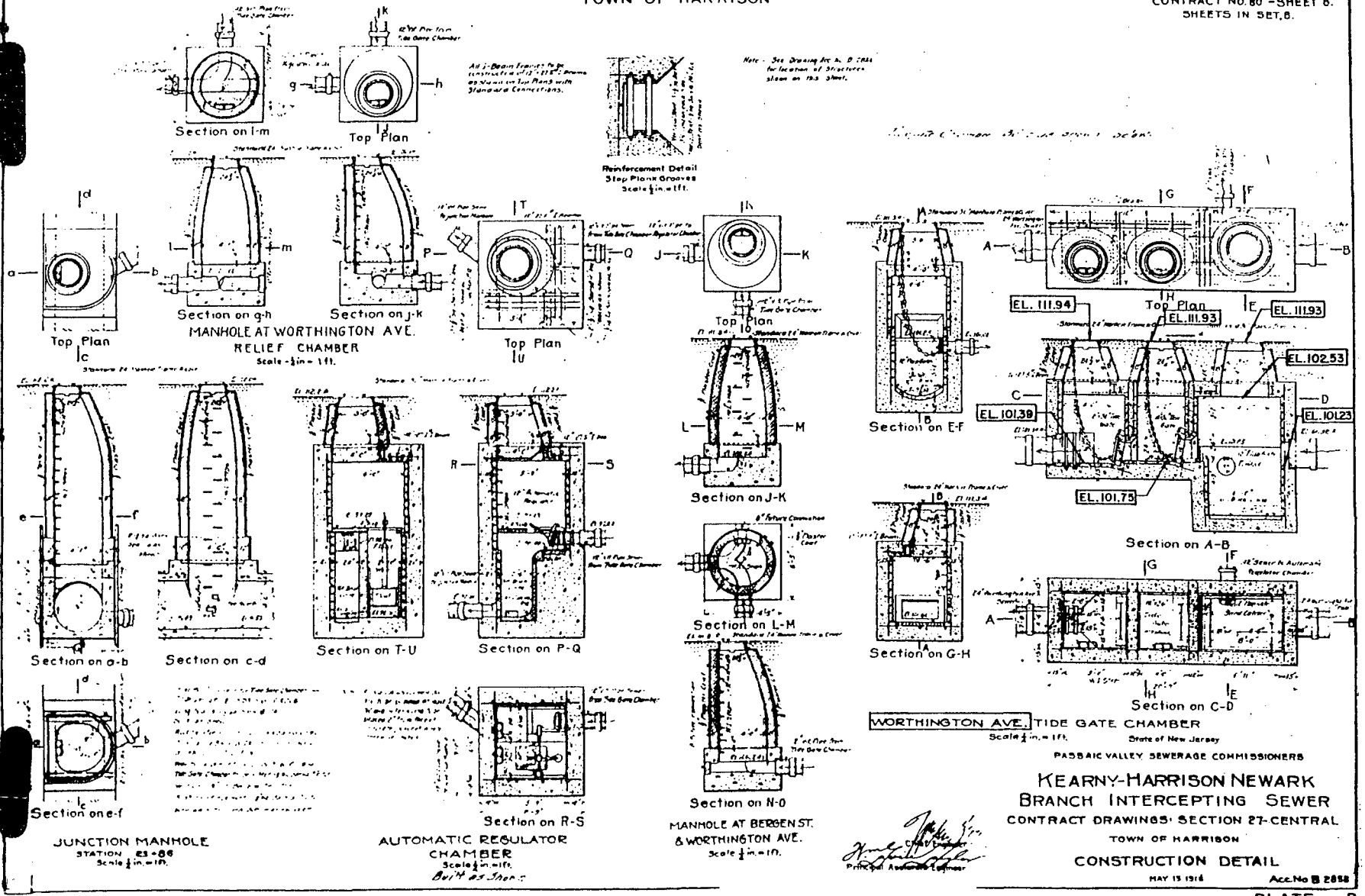
946190086

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER H-007
WORTHINGTON AVENUE, HARRISON
PLAN AND PROFILE
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE A

TOWN OF HARRISON

CONTRACT NO. 80 - SHEET 8.
SHEETS IN SET, 8.



State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

KEARNY-HARRISON NEWARK BRANCH INTERCEPTING SEWER

CONTRACT DRAWINGS: SECTION 27-CENTRAL

TOWN OF HARRISON

CONSTRUCTION DETAIL

MAY 15 1914

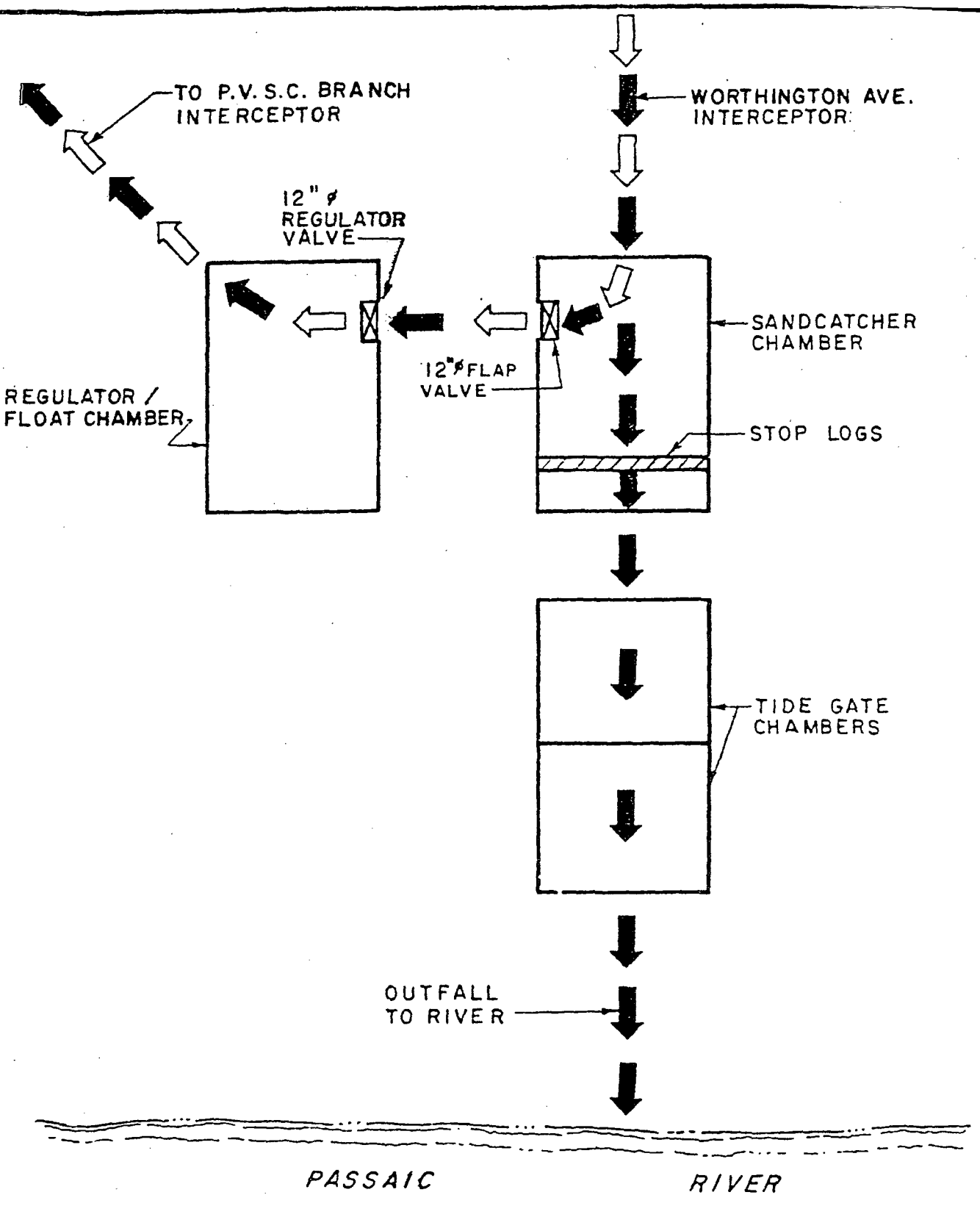
Acc. No. B 2858

Chief Engineer

Principal Assistant Engineer

946190087

PLATE 8



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WORTHINGTON AVENUE, HARRISON

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190088

PLATE C

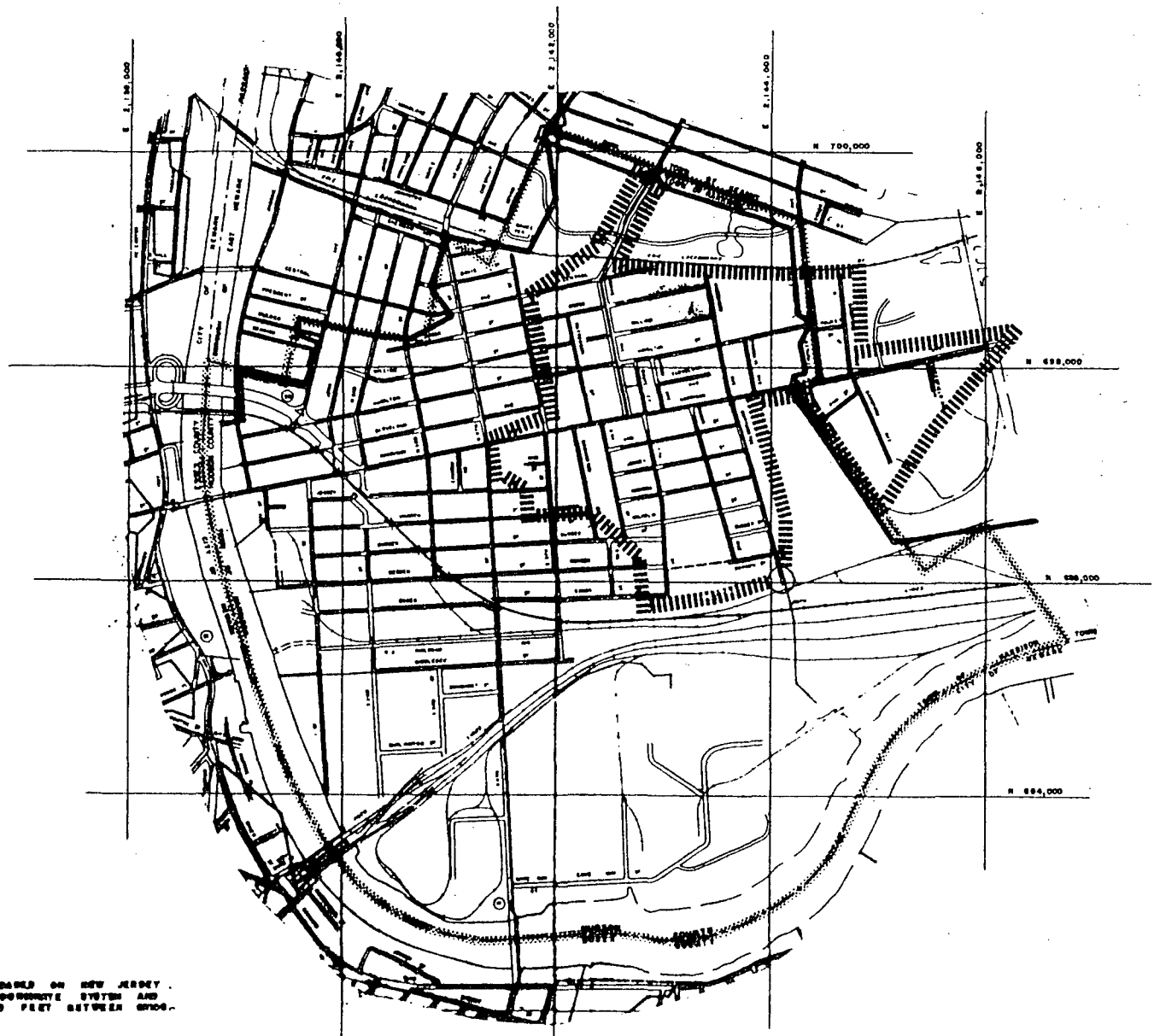
WORTHINGTON AVENUE OVERFLOW CHAMBER H-007 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in downstream end of sand catcher just before opening to first tide gate chamber
Tide Gate Condition:	both tide gates noted as leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.277 square miles-177 acres
Average Daily Flow	
Seasonal Dry Weather:	2.0 MGD (estimated)
Seasonal Wet Weather:	2.8 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	5.9 MGD
Approximate Length of Combined Sewers Serving District:	32,100 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVDC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- WORTHINGTON AVENUE OVERFLOW CHAMBER
- WORTHINGTON AVENUE COLLECTION SYSTEM

N

BASIS

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS SHOWN 2000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WORTHINGTON AVENUE, HARRISON

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D

946190090

P.V.S.C. Reference # 126 Date November 27, 1974

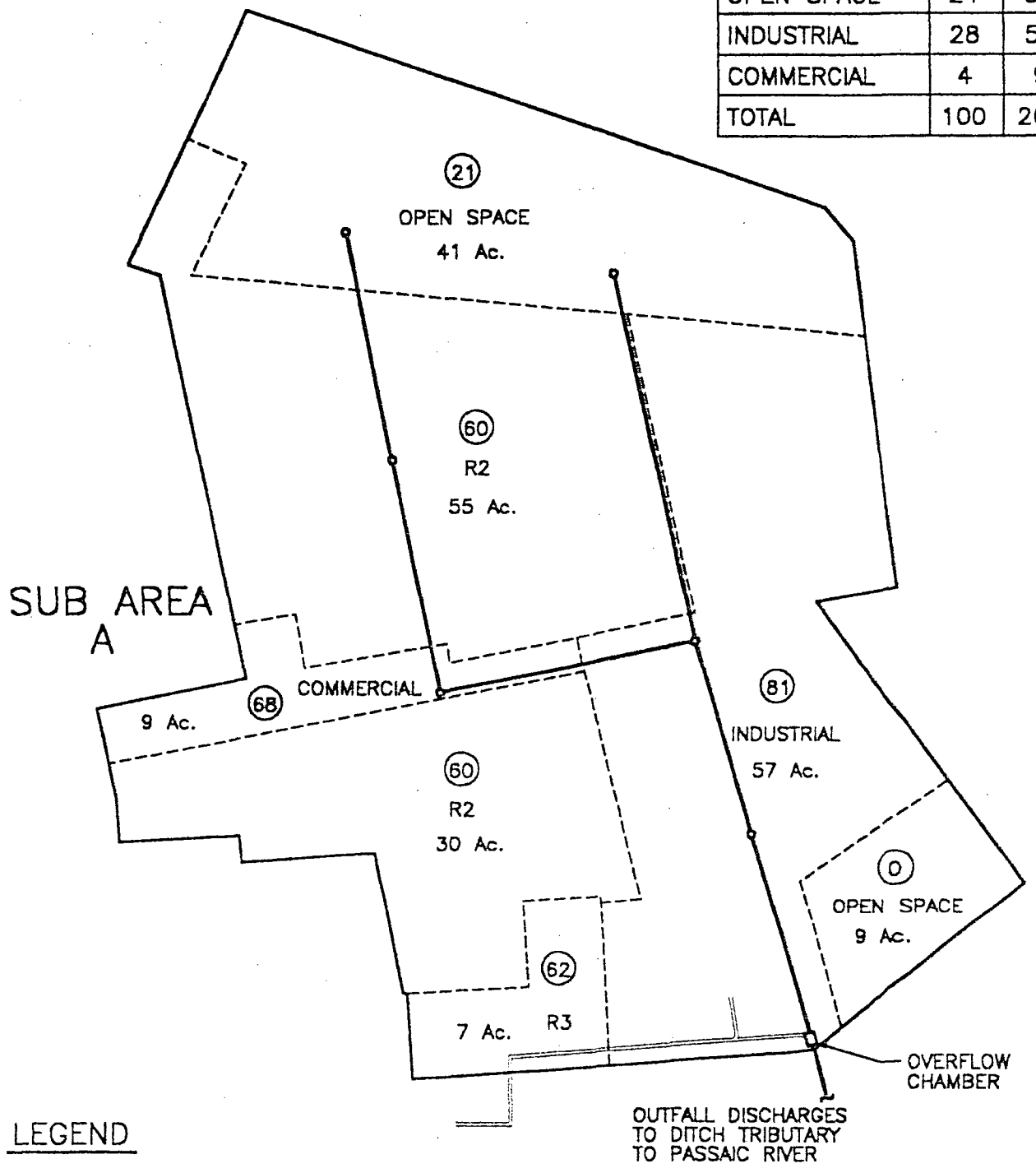
Elson Killam Associates-Infiltration Studies

Worthington AVenue in front of Campbell Foundry-Harrison from First manhole upstream from Sandcatcher 3:02 P.M. 11/25/74 to 3:25 P. M. 11/2
24 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	7.4	136	136	100.0	544	160	34.0	B.O.D.	
2	7.4	94	94	100.0	224	88	39.3	FAILURE	
3	7.4	32	32	100.0	200	56	28.0	CHEMICAL	
4	7.4	44	44	100.0	196	46	23.5	AND / OR	
5	7.3	70	70	100.0	188	57	30.3	INCUBATION	
6	7.3	34	34	100.0	168	57	33.9		
7	7.3	40	40	100.0	164	52	31.7		
8	7.3	16	16	100.0	128	41	32.0		
9	7.3	28	28	100.0	116	39	33.6		
10	7.4	18	18	100.0	100	32	32.0		
11	7.5	8	8	100.0	92	25	27.1		
12	7.4	6	6	100.0	52	19	36.5		
13	7.5	6	6	100.0	56	14	25.0		
14	7.5	14	14	100.0	60	16	26.7		
15	7.5	8	8	100.0	36	12	33.3		
16	7.5	4	4	100.0	40	14	35.0		
17	7.4	10	10	100.0	76	41	56.2		
18	7.4	56	56	100.0	124	53	42.7		
19	7.4	48	48	100.0	80	56	70.0		
20	7.6	26	26	100.0	236	76	32.2		
21	7.5	34	34	100.0	164	50	30.5		
22	9.0	176	164	93.2	440	160	36.4		
23	8.3	56	56	100.0	172	55	32.0		
24	7.9	46	46	100.0	164	59	36.0		
							34.9		

LAND USE	%	ACRES
R3	3	7
R2	41	85
R1	---	---
OPEN SPACE	24	50
INDUSTRIAL	28	57
COMMERCIAL	4	9
TOTAL	100	208



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
WORTHINGTON AVENUE OVERFLOW
TOWN OF HARRISON

Killam Associates Consulting Engineers

FIGURE H-007

946190092

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

STEWART AVENUE, KEARNY
K-001

1976

ELSON T. KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

STEWART AVENUE OVERFLOW CHAMBER, KEARNY

This overflow chamber serves a tributary area of only 34 acres. The area is provided entirely with combined sewers. The average daily dry weather flow was estimated to be about 0.06 MGD during both dry and wet weather months.

Metering and sampling facilities were installed in this chamber beginning August 6, 1975, and extending through October 24, 1975. During this period of observation, thirteen rainfalls occurred and overflows are estimated to have occurred on eleven occasions. It has been estimated that overflow will occur at this chamber about 60 to 75 times per year, based upon rainfall occurrences of 70 to 90 times per year.

It was found that approximately 0.06 inches per hour of average rainfall intensity was required to cause overflow. The volume of overflow was found to range from 0.1 to 0.4 MG. However, the peak storm water overflow rate has reached 14 MGD.

Sampling of the dry weather sewage at this chamber showed that suspended solids concentrations averaged 255 mg/1 and BOD averaged about 271 mg/1. This area is primarily residential in nature.

The sampling of the storm water overflow showed that total suspended solids concentrations averaged 144 mg/1 and BOD values averaged only 36 mg/1. The lower wastewater characteristics for BOD are attributed to the dilution effect in this district due to storm flows.

ELSON T. KILLAM ASSOCIATES, INC.

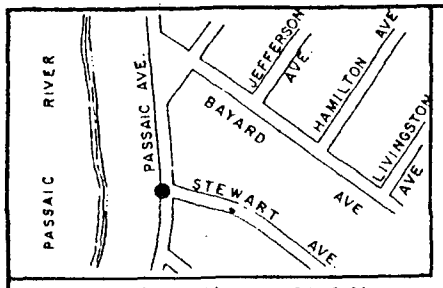
OVERFLOW DATA EXTRACT

STEWART AVENUE OVERFLOW CHAMBER

Kearny

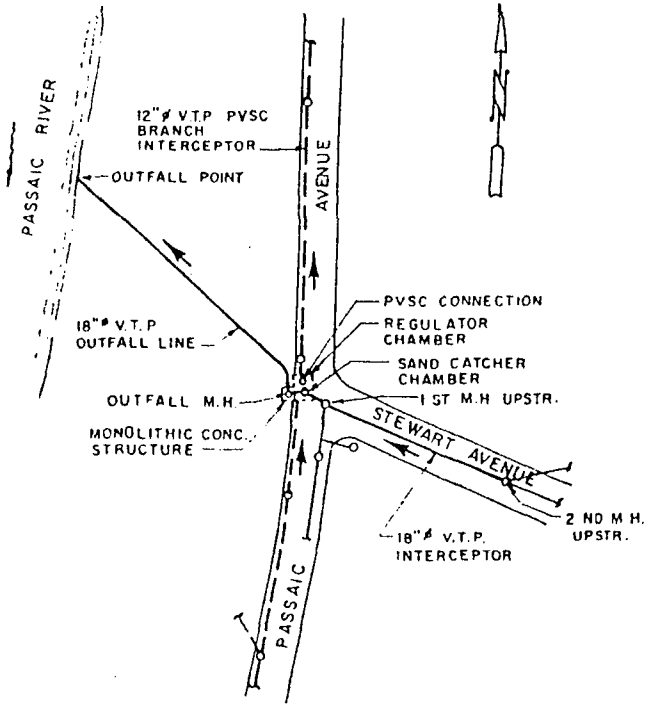
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	entirely residential
Overflow Location (See Plate A):	In westerly side of intersection of Stewart Avenue and Passaic Avenue
District Outlet Sewer (See Plates A and B):	18" diameter VTP sewer
Outfall to River (See Plates A and B):	18" diameter VTP sewer
Outfall Condition:	outfall line clear, but outfall point covered partially with debris
Tidal Effects:	None observed
Surcharge Effects:	None evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

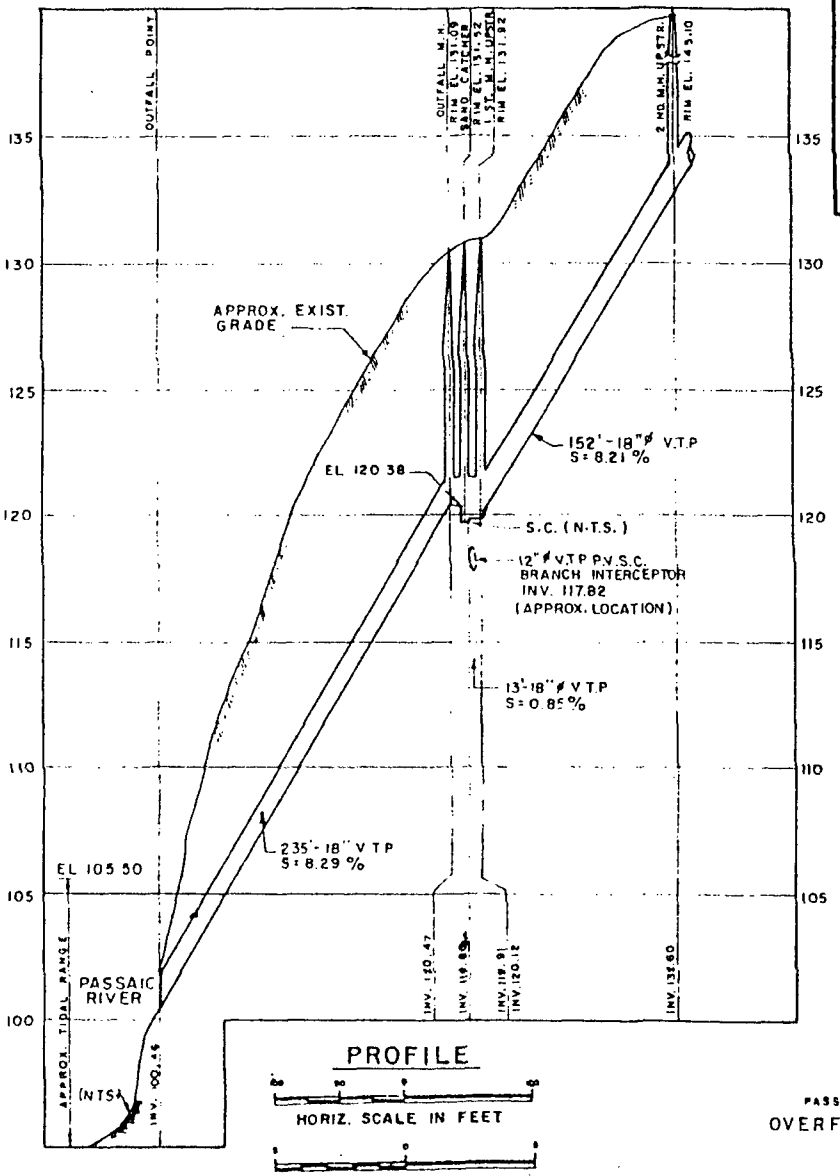
SCALE IN FEET



PLAN

SCALE IN FEET

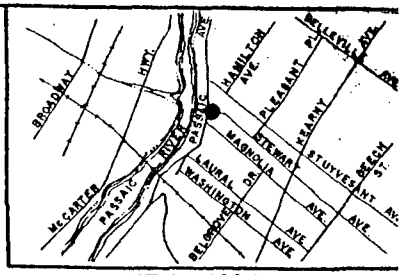
ALL ELEVATIONS BASED ON B.M. NY 1279 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET



KEY MAP

SCALE IN FEET

NOTE

ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND

- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-001

STEWART AVENUE, KEARNY

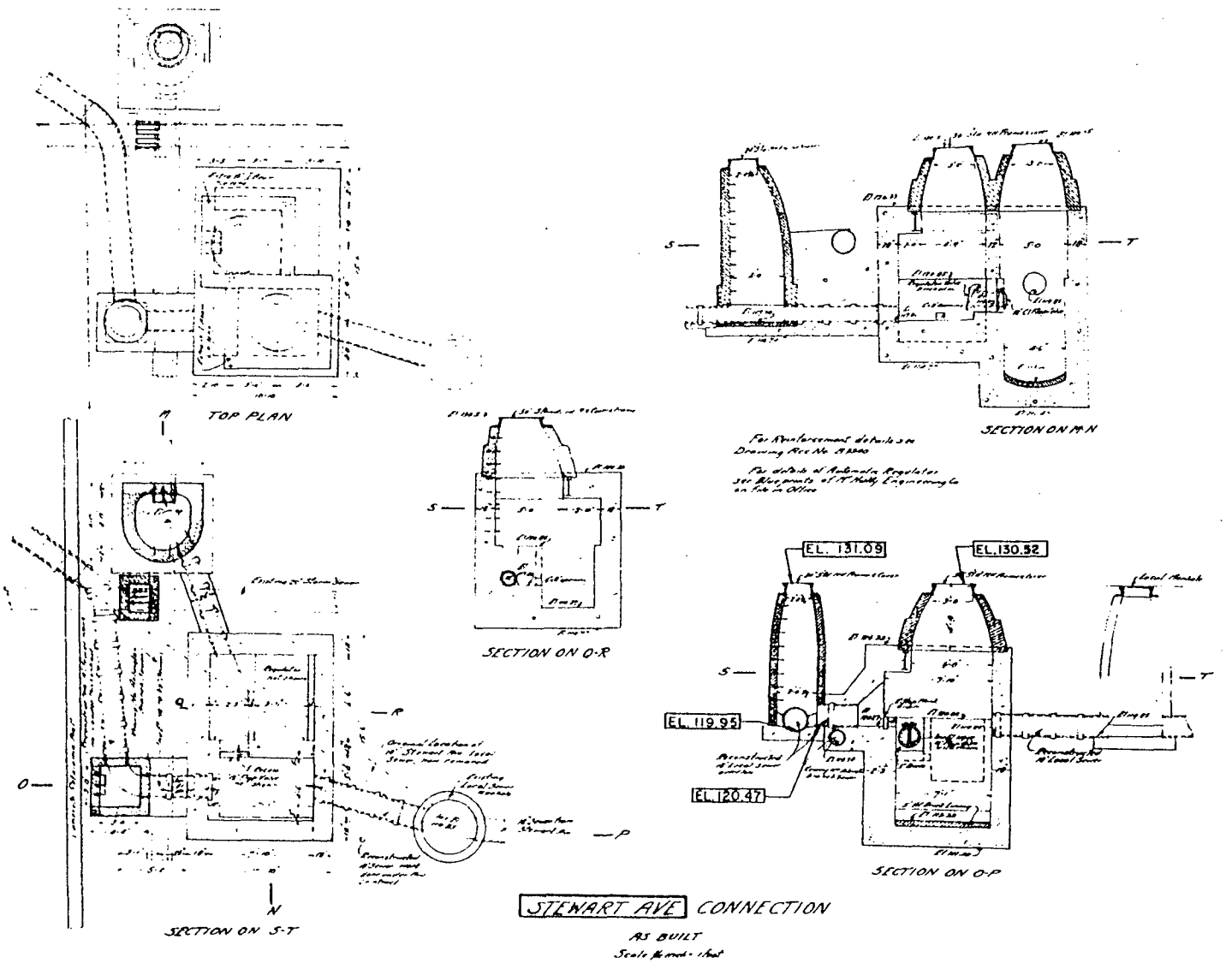
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Municipal Engineers

PLATE A

946190096



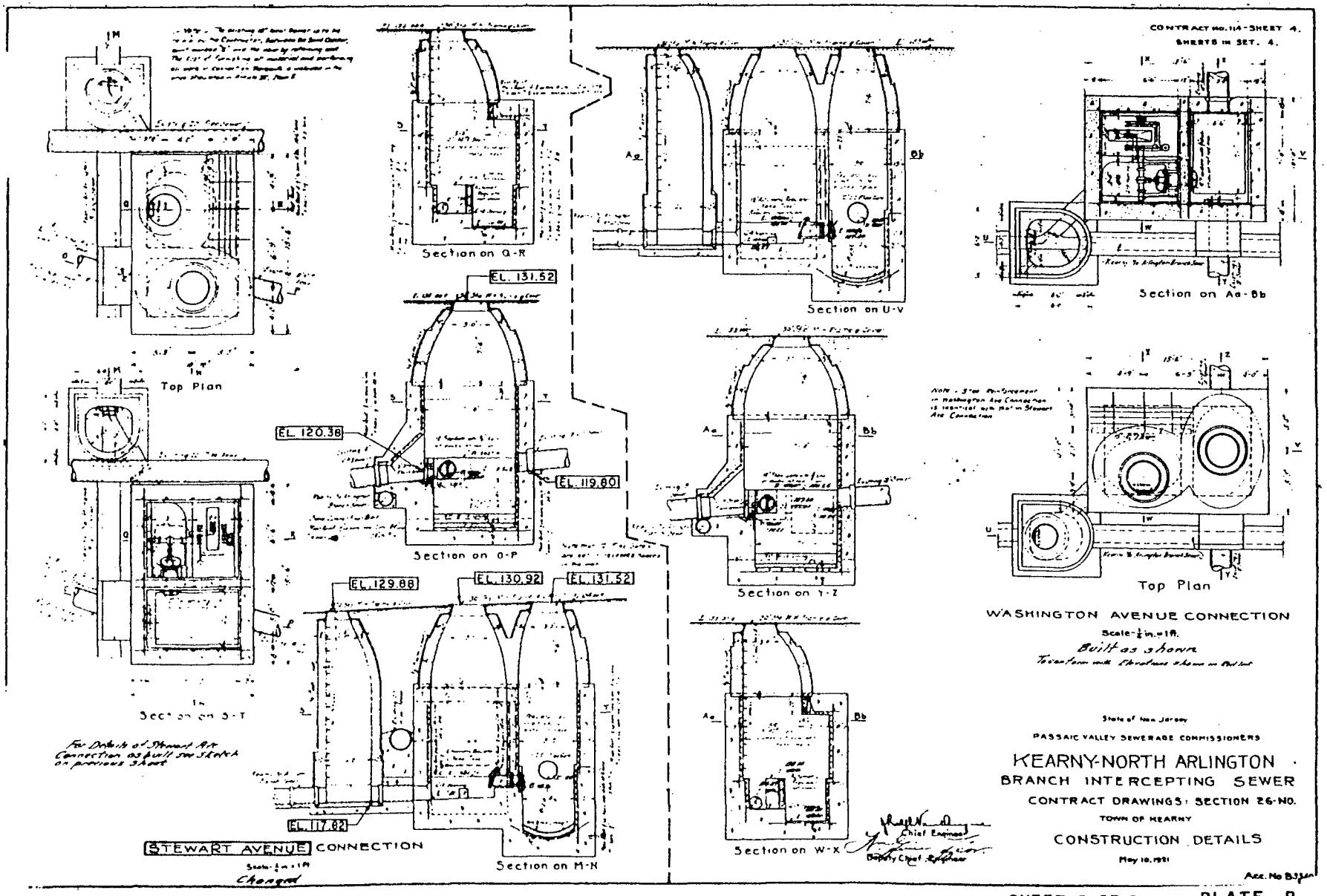
STEWART AVE CONNECTION

AS BUILT

(3A)

SHEET 1 OF 2 PLATE B

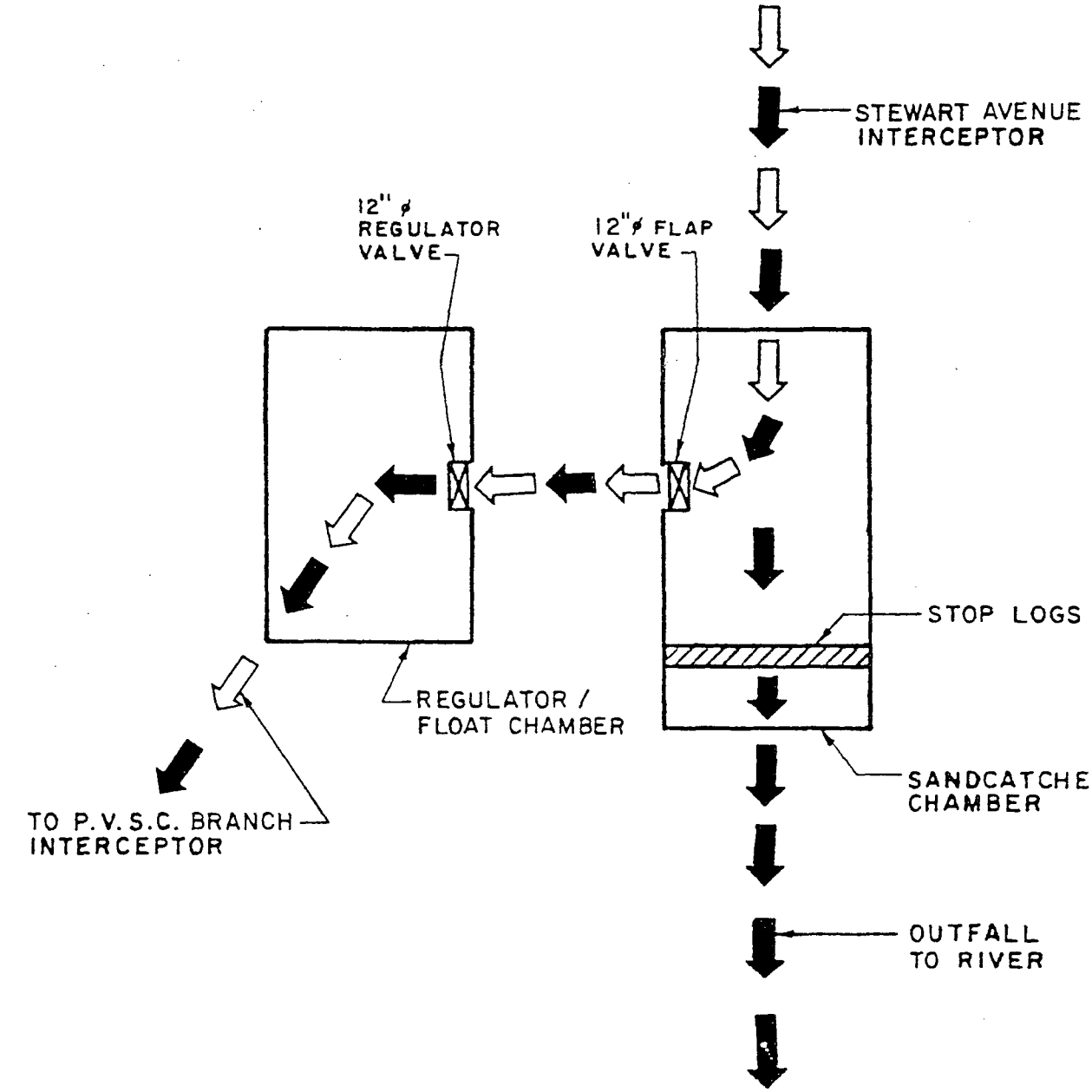
946190097



SHEET 2 OF 2 PLATE B

(3B)

946190098



LEGEND

⇨ DRY WEATHER FLOW

➡ STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

STEWART AVENUE, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190099

PLATE C

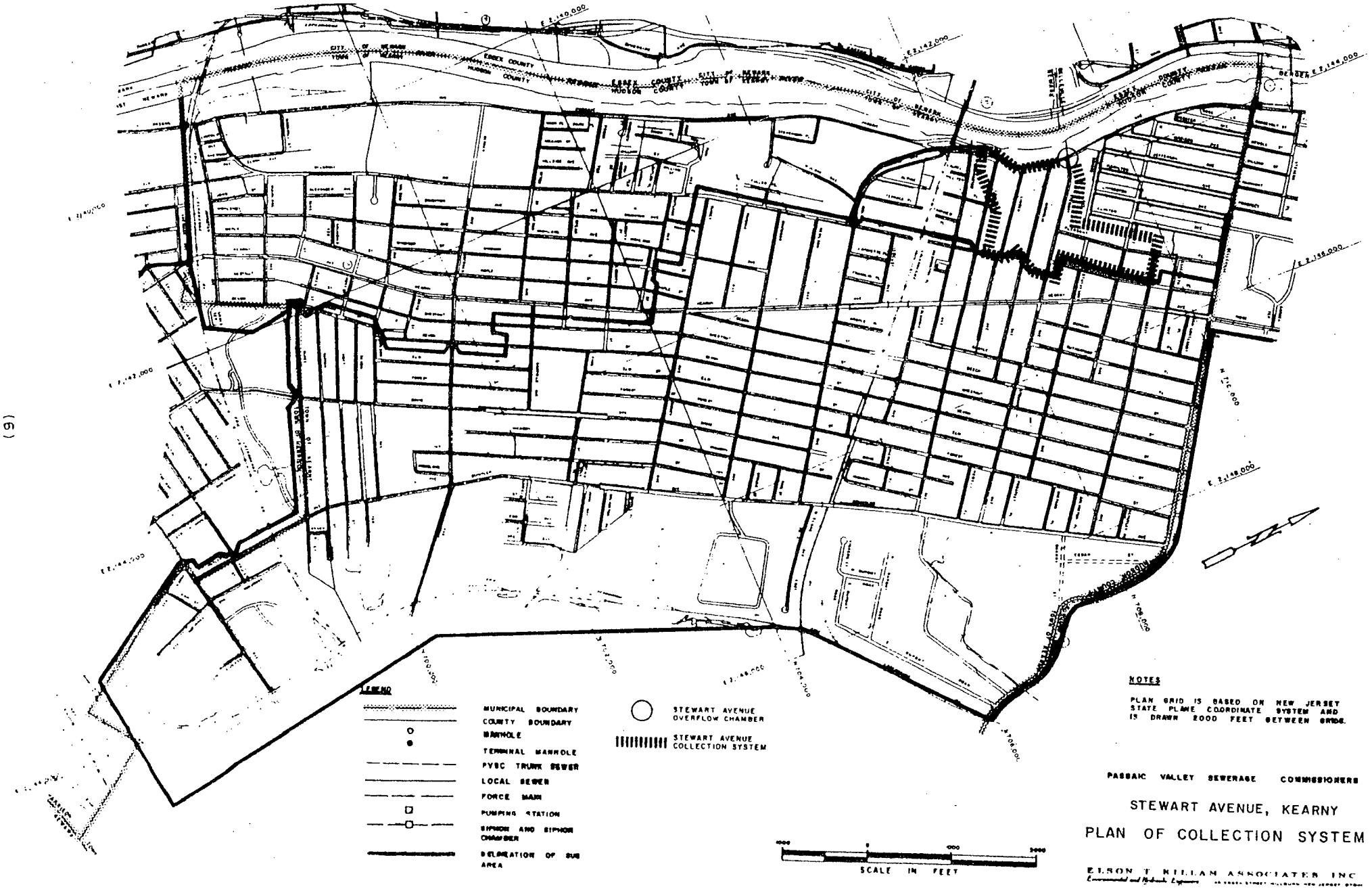
STEWART AVE. OVERFLOW K-001 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	no stop logs present; overflow must reach invert of outfall line
Tide Gate Condition:	none (no tide gate chambers for this location, due to relative elevation with respect to river)

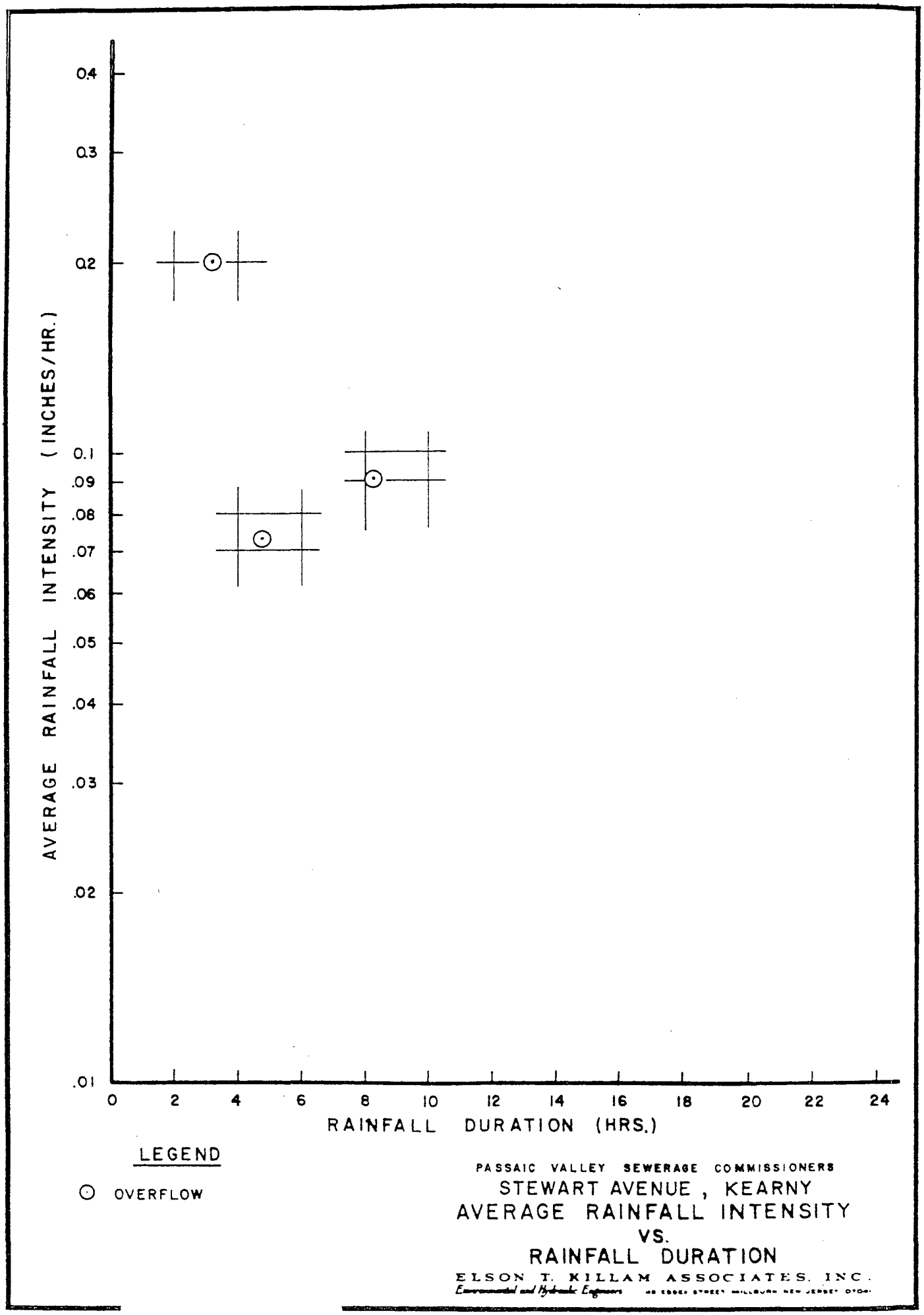
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.053 square miles-34 acres
Average Daily Flow	
Seasonal Dry Weather:	0.06 MGD (estimated)
Seasonal Wet Weather:	0.06 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	3.1 MGD
Approximate Length of Combined Sewers Serving District:	8,300 linear feet


LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
STEWART AVENUE OVERFLOW CHAMBER
STEWART AVENUE COLLECTION SYSTEM
SCALE IN FEET
NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
PASSAIC VALLEY SEWERAGE COMMISSIONERS
STEWART AVENUE, KEARNY
PLAN OF COLLECTION SYSTEM
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946190101



PASSAIC VALLEY SEWERAGE COMMISSIONERS

STEWART AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

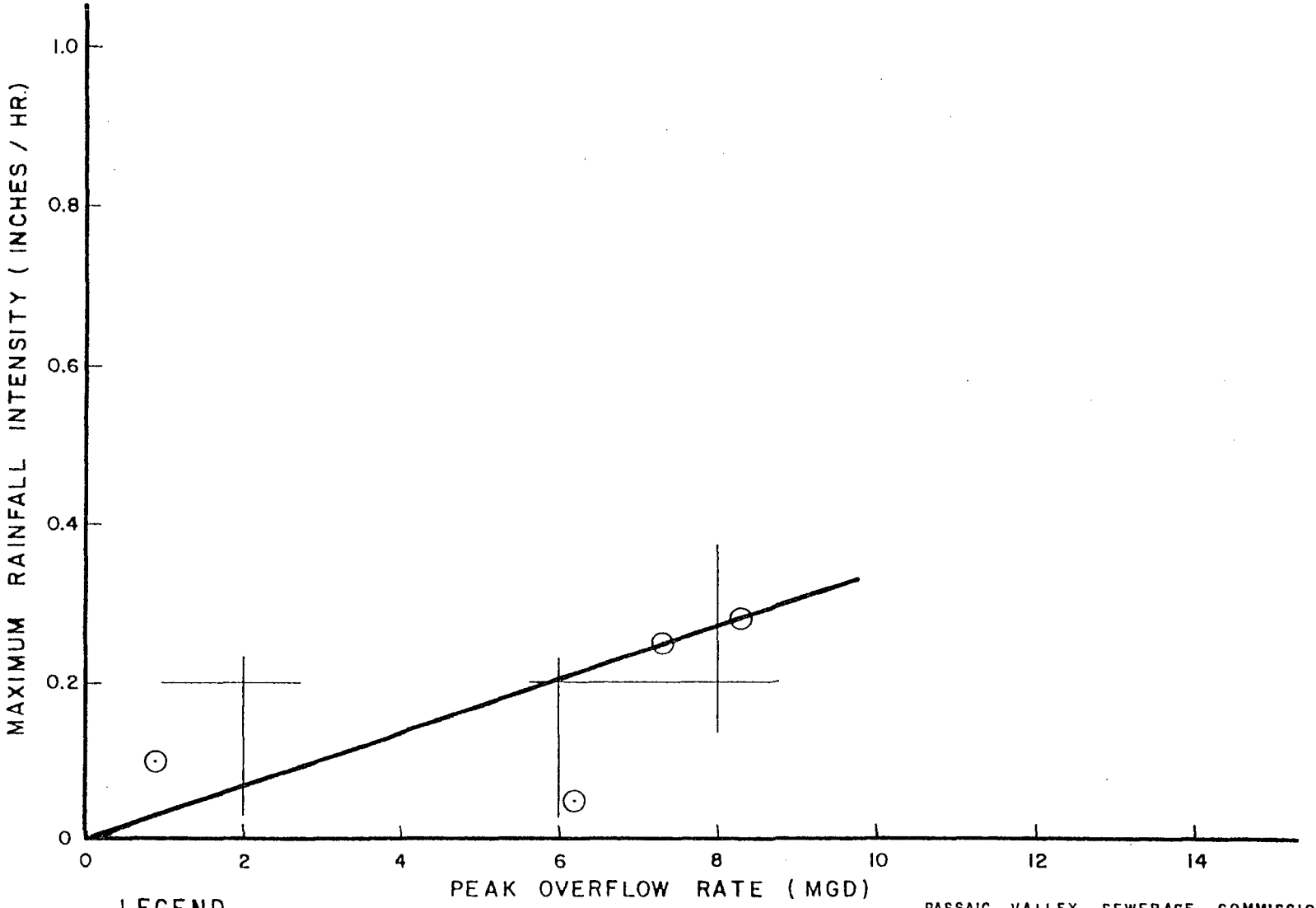
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190102

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

STEWART AVENUE, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 46 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

946190103

P.V.S.C. Reference # L - 51 Date 12/12/74

Elson Killam Associates-Infiltration Studies - Set # 12
Stewart Avenue Overflow Chamber, Kearny 017/K-001
2:50 P.M. 12/11/74 to 1:25 P.M. 12/12/74

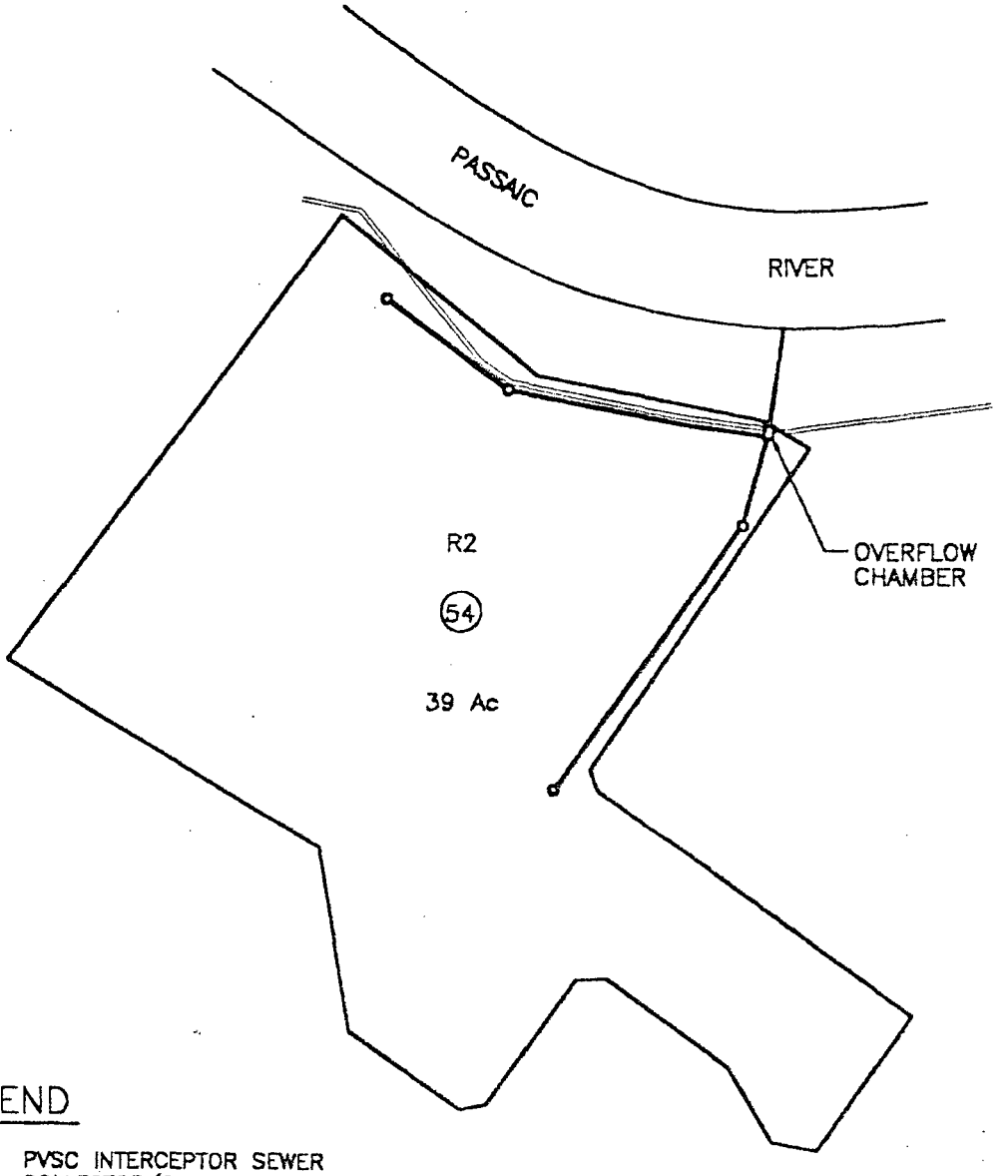
BASELINE

21 SAMPLES

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	8.2	276	152	55.2	400	99	24.8	215	53.7.
2	7.9	228	114	50.0	287	117	40.8	195	68.0.
3	7.9	256	136	53.2	351	120	34.2	237	67.6
4	7.6	314	188	598	606	195	32.2	460	76.0.
5	7.7	232	130	56.1	768	260	33.8	520	67.7.
6	7.7	410	266	65.9	622	220	35.4	372	59.8.
7	8.1	282	154	54.2	291	114	39.3	-	- .
8	8.7	234	118	50.4	327	117	35.8	200	61.2.
9	8.6	346	206	59.5	303	90	29.7	210	69.3.
10	8.7	160	40	25.5	311	87	28.0	173	55.7.
11	8.3	150	58	38.7	117	42	35.9	-	- .
12	8.3	140	48	34.3	93	37	39.8	-	- .
13	8.2	200	98	49.0	65	30	46.2	-	-
14	8.2	132	42	31.8	69	24	34.8	-	- <
15	8.6	130	38	29.2	101	47	46.6	-	- .
16	8.6	190	80	42.1	238	78	32.7	-	- <
17	8.7	380	262	69.0	558	152	27.7	265	47.5.
18	8.1	302	264	87.5	562	136	24.2	110	19.6.
19	8.0	296	182	61.5	517	148	28.7	265	51.3.
20	8.0	350	230	65.8	452	132	29.3	295	65.4
21	8.0	352	222	63.1	558	144	25.8	-	- .
							33.6		58.7

946190104

LAND USE	%	ACRES
R3	---	---
R2	100	39
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	---	---
TOTAL	100	39



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
STEWART AVENUE OVERFLOW
TOWN OF KEARNY

Killam
Associates • Consulting Engineers

946190105

FIGURE K-001

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

WASHINGTON AVENUE, KEARNY
K-862

1976

ELSON T. KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

WASHINGTON AVENUE OVERFLOW CHAMBER, KEARNY

The Washington Avenue overflow chamber serves a tributary area of about 37 acres, all of which are provided with a combined sewer system. The estimated dry weather flow was found to range from about 0.06 to 0.07 MGD during dry and wet weather months, respectively.

Under storm flow conditions in the collection system, it was found that this overflow was activated with essentially rainfalls of intermediate intensity.

Metering and sampling facilities were installed and maintained in this chamber commencing on June 5, 1975, and continuing through August 7, 1975. During this period of time, sixteen rainfall occurrences were observed. The total rainfall ranged from as little as 0.10 inches to as much as 2.55 inches. During this period of observation (which happened to fall at a time of especially heavy rainfalls), it was determined that fifteen overflows occurred at this chamber. It was found that, when the average rainfall intensity approached or exceeded about 0.07 to 0.09 inches per hour, overflow was likely to occur.

It was observed that the volumetric overflow was minimal, ranging from a negligible amount to about 0.1 MG. Peak overflow rates were found to reach 5 MGD.

The results of sampling during non-rainfall conditions showed total suspended solids concentrations averaging about 122 mg/l, while BOD concentrations averaged over 300 mg/l. Sampling during times of storm flow indicated that total suspended solids averaged about 314 mg/l and BOD concentrations averaged about 68 mg/l. The higher total suspended solids

values during storm flow were indicative of concentrated pollution due to the flushing action, which is typical of the sewage in combined sewer systems. The lower BOD concentrations during storm flow are attributed to the dilution effect of the increased flow.

ELSON T. KILLAM ASSOCIATES, INC.

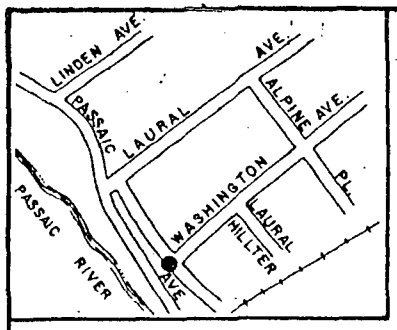
OVERFLOW DATA EXTRACT

WASHINGTON AVENUE OVERFLOW CHAMBER

KEARNY

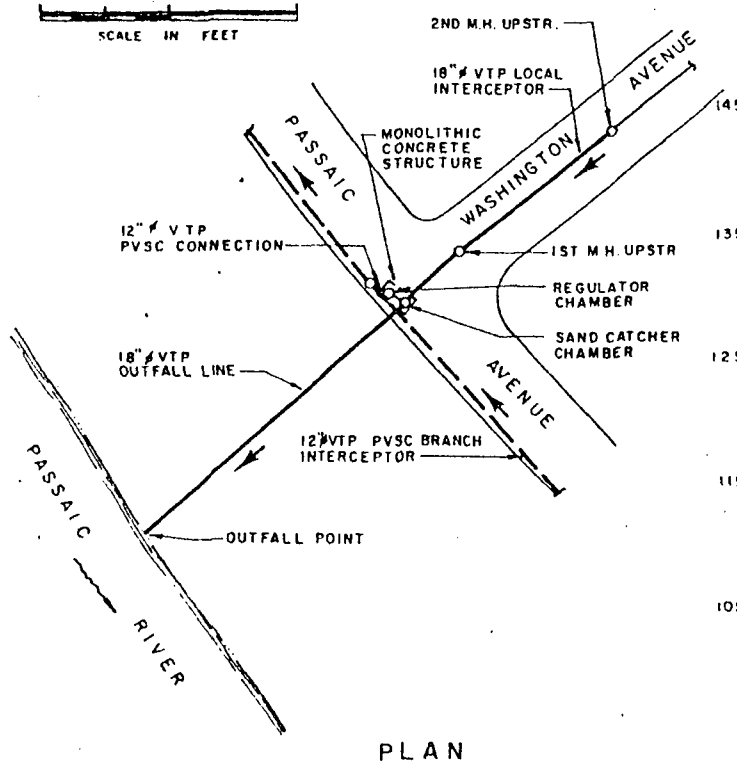
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	entirely residential
Overflow Location (See Plate A):	in westerly side of intersection of Washington Avenue and Passaic Avenue
District Outlet Sewer (See Plates A and B):	18" diameter VTP sewer
Outfall to River (See Plates A and B):	18" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



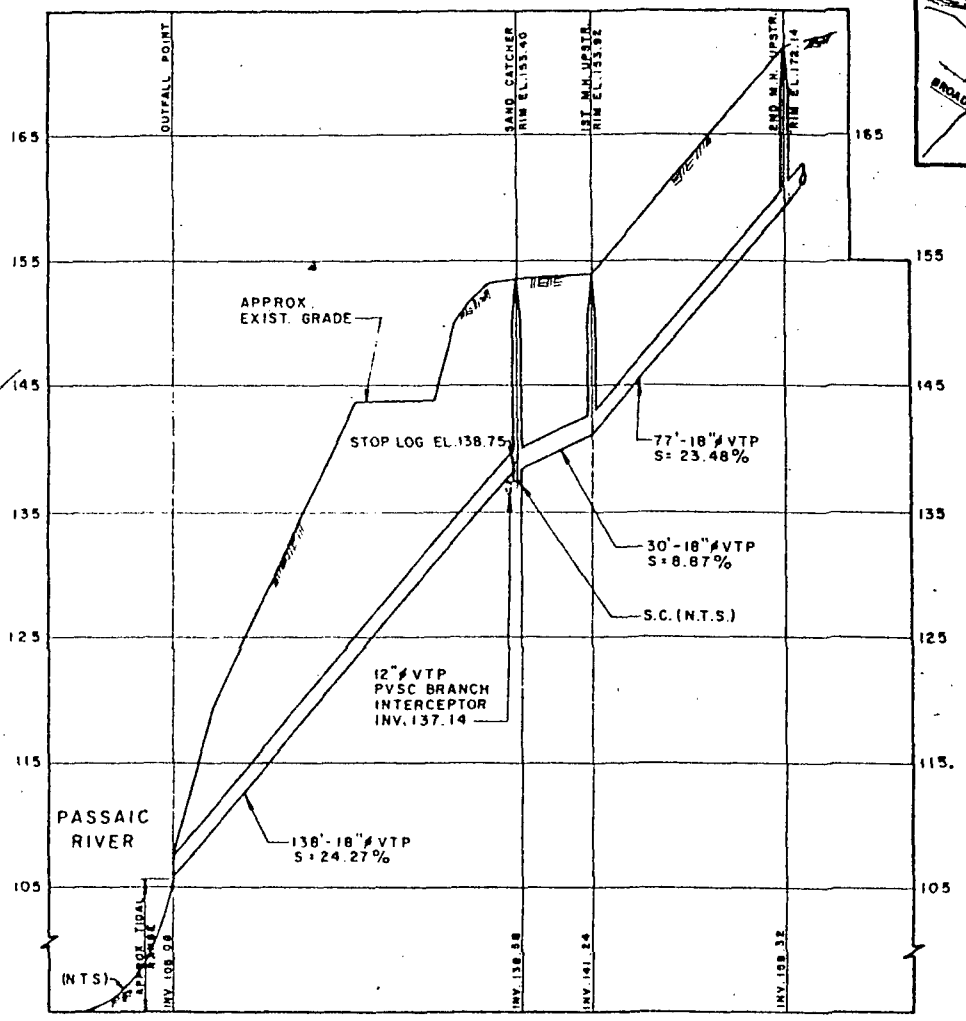
LOCATION PLAN

SCALE IN FEET



PLAN

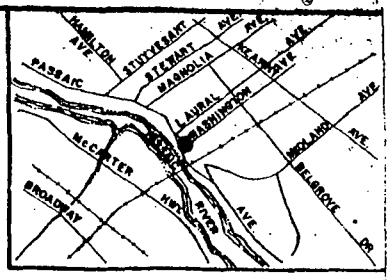
HORIZ. SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET



KEY MAP

SCALE IN FEET

NOTE:
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND

- → DIRECTION OF FLOW
- B.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION

ALL ELEVATIONS BASED ON N.G.V.D. 1929 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-002

WASHINGTON AVENUE, KEARNY

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A

946190110

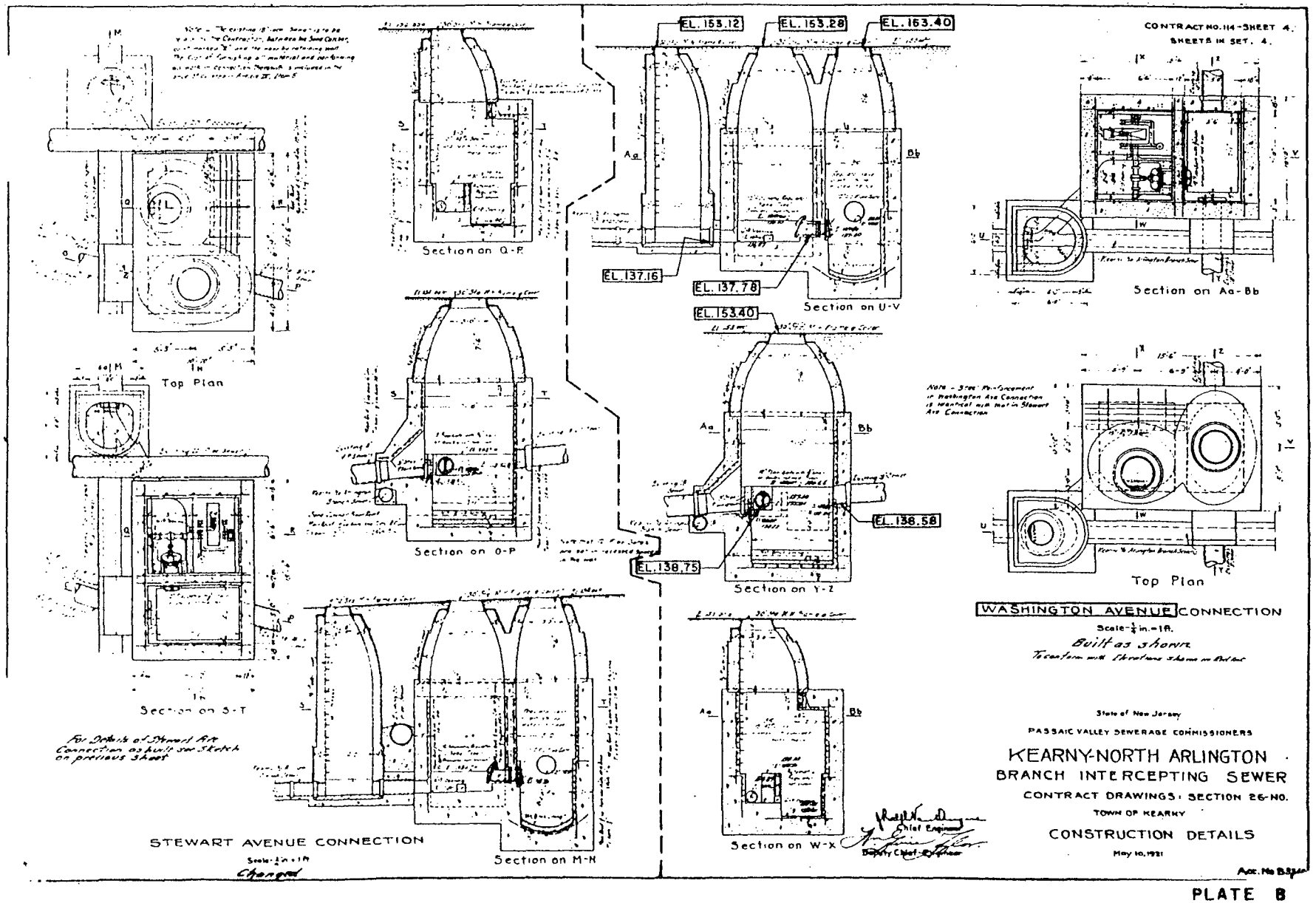
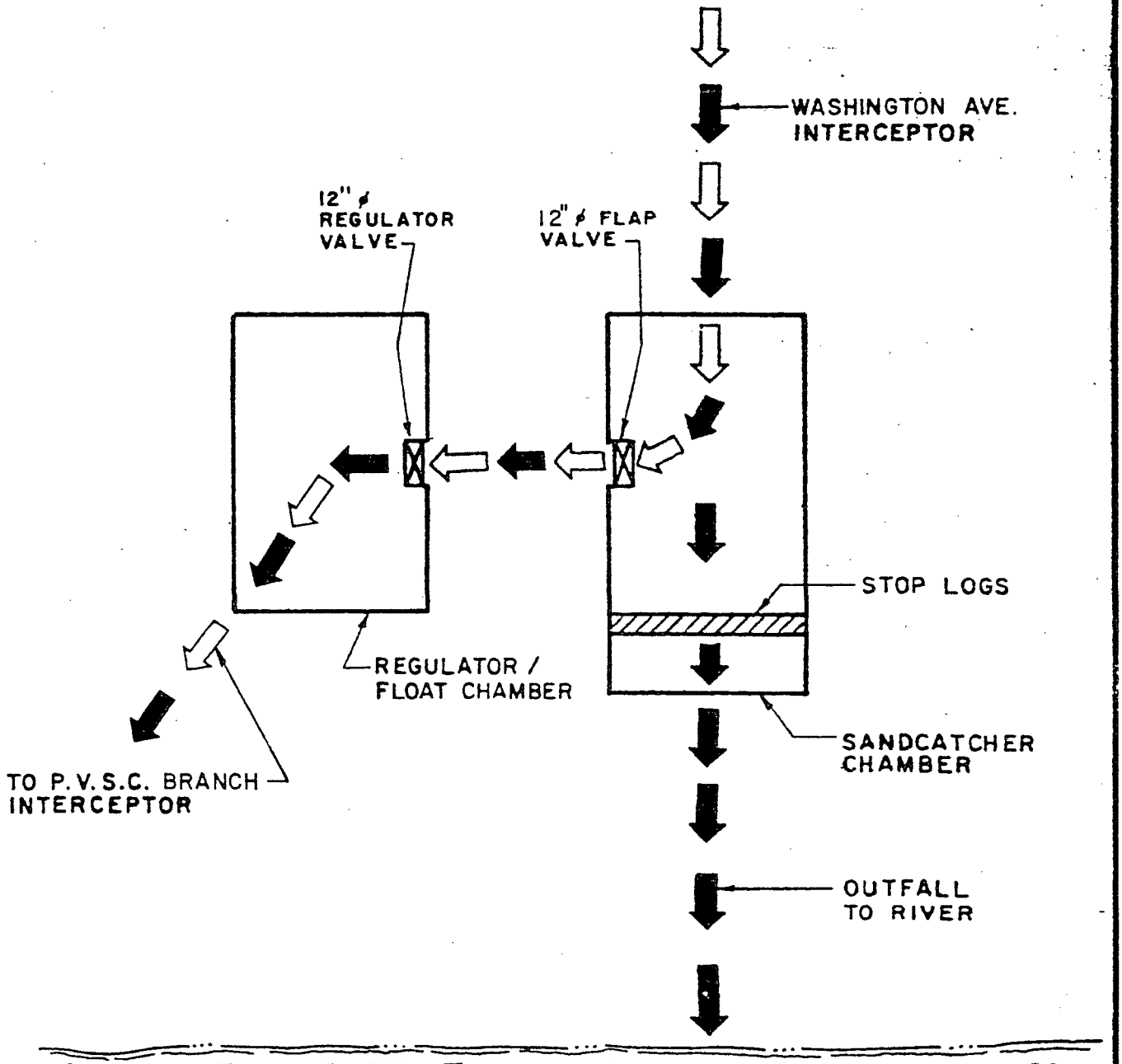


PLATE B

946190111



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WASHINGTON AVENUE, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190112

PLATE C

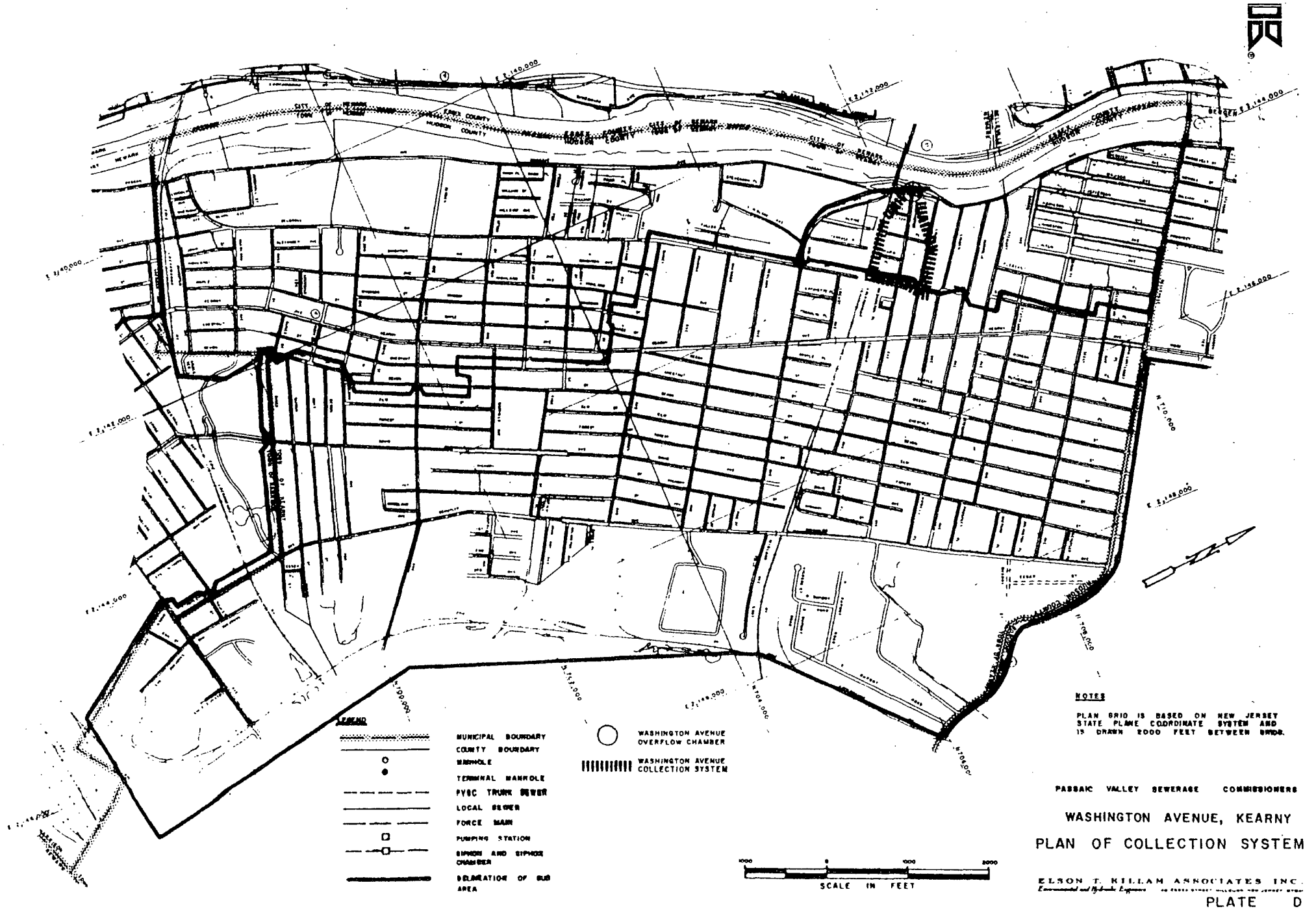
WASHINGTON AVENUE OVERFLOW CHAMBER K-002 (Cont'd.)

Condition of Regulator:	Appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located at downstream end of sand catcher ahead of opening to outfall line
Tide Gate Condition:	none (no tide gate chambers for this location)

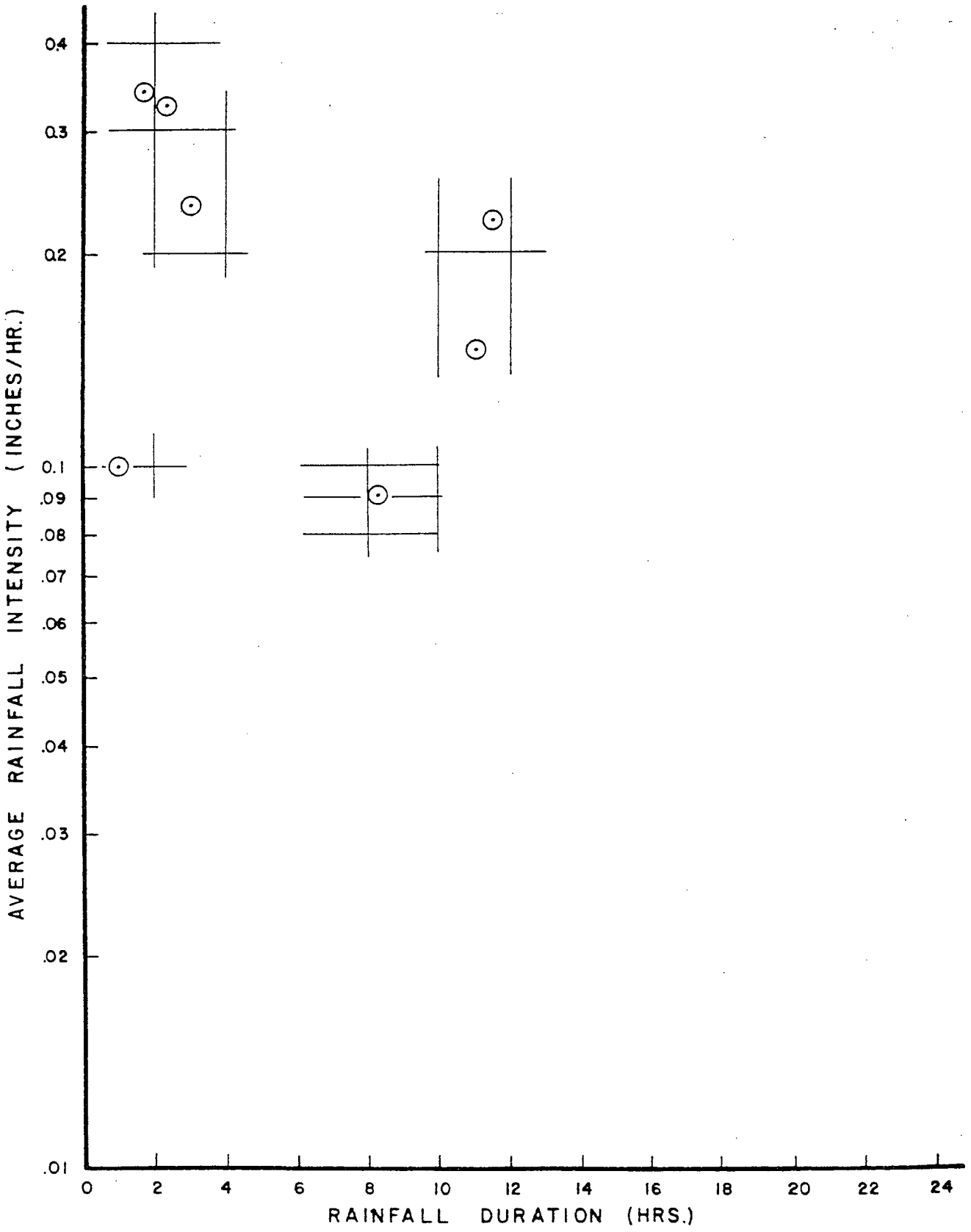
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.058 square miles-37 acres
Average Daily Flow	
Seasonal Dry Weather:	0.06 MGD (estimated)
Seasonal Wet Weather:	0.07 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	1.8 MGD
Approximate Length of Combined Sewers Serving District:	4,000 linear feet


LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
WASHINGTON AVENUE OVERFLOW CHAMBER
WASHINGTON AVENUE COLLECTION SYSTEM
SCALE IN FEET
NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
PASSAIC VALLEY SEWERAGE COMMISSIONERS
WASHINGTON AVENUE, KEARNY
PLAN OF COLLECTION SYSTEM
ELSON T. KILLAM ASSOCIATES INC.
PLATE D

946190114



LEGEND

⊙ OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WASHINGTON AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

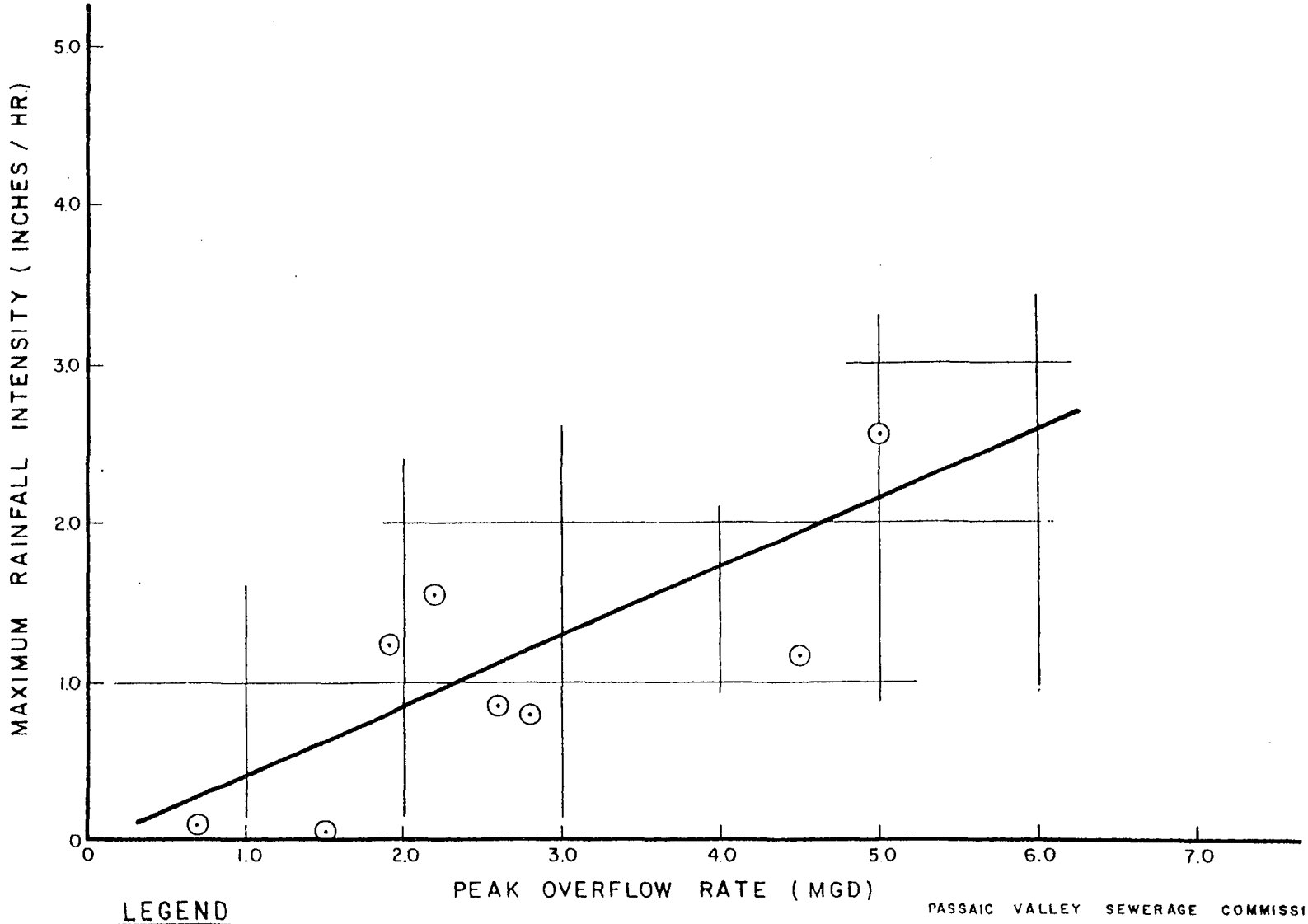
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190115

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WASHINGTON AVENUE, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE F

946190116

PVSC Reference # H-232

Date: 8/21/75

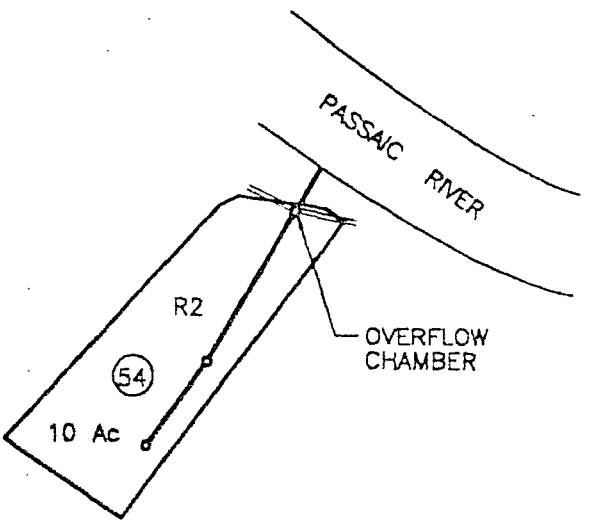
Elson T. Killam Associates - Infiltration Studies
Washington Avenue, Kearny - Sandcatcher
13:13 - 8/13/75 to 13:13 - 8/14/75

Chamber #018/K-002
Sampler #359
Set #29

	24 SAMPLES						BASELINE			
SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	$\frac{TOC}{COD}$%	BOD	$\frac{BOD}{COD}$%	
1	7.4	124	90	72.5	436	128	29.3	413	94.8	
2	7.4	74	60	81.1	351	112	31.9	236	67.2	
3	7.2	64	60	93.8	335	104	31.1	237	70.8	
4	7.2	70	60	85.7	360	120	33.3	210	58.3	
5	7.3	76	66	86.8	444	132	29.7	300	67.6	
6	7.2	72	64	89.0	408	128	31.4	270	66.2	
7	7.0	74	62	83.9	448	132	29.5	245	54.7	
8	7.0	76	58	76.3	416	156	37.5	285	68.5	
9	7.0	70	60	85.7	412	144	35.0	325	79.0	
10	7.1	66	60	91.0	404	140	34.7	275	67.6	
11	6.9	56	56	100.0	408	128	26.7	275	67.0	
12	7.1	60	50	83.3	388	124	32.0	225	58.0	
13	7.0	58	48	82.9	384	125	32.6	264	68.7	
14	7.0	42	42	100.0	396	120	30.3	261	66.0	
15	7.0	64	58	90.7	380	120	31.6	200	52.7	
16	7.1	62	48	77.4	412	130	31.6	325	79.0	
17	7.1	90	80	88.9	400	125	29.0	350	87.5	
18	7.0	84	64	76.3	432	135	31.3	-	-	
19	6.9	62	62	100.0	388	135	34.8	213	54.9	
20	7.0	68	68	100.0	396	145	36.6	252	63.7	
21	6.9	80	74	92.5	400	115	28.8	-	-	
22	6.9	88	88	100.0	457	135	29.5	400	87.5	
23	6.9	90	68	75.6	440	140	31.8	250	56.9	
24	6.8	1262	1060	84.0	1709	480	26.8	1350	78.9	
							31.5		68.9	

946190117

LAND USE	%	ACRES
R3	---	---
R2	100	10
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	---	---
TOTAL	100	10



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
WASHINGTON STREET OVERFLOW
TOWN OF KEARNY

Killam
Associates Consulting Engineers

946190118

FIGURE K-002

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

BERGEN AVENUE, KEARNY
K-003

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

BERGEN AVENUE OVERFLOW CHAMBER, KEARNY

This overflow chamber serves a tributary area of only about 12 acres. It is estimated that only about ten percent of this system is served by combined sewers. The dry weather flow is negligible, being estimated to be about 50,000 gallons per day (gpd). This overflow is located at the westerly end of Bergen Avenue at the Passaic River.

Facilities for metering and sampling the waste were operative from April 24, 1975 through May 7, 1975. During this period of observation, rainfall occurred on eight occasions, during which six overflows were estimated to have occurred. It has been estimated that overflows will occur at this chamber from 50 to 65 times per year when the rainfall occurrences range from 70 to 90 times per year. It was found that an average rainfall intensity of about 0.05 to 0.07 inches per hour caused overflow.

The overflow volume is negligible, having been found to be about 0.1 MG during the worst storm recorded during the period. The peak overflow rate was determined to be 2.4 MGD, coincidentally, when 0.1 MG overflow volume was recorded.

Sampling of the waste reflected an extremely dilute sewage, both under dry weather flow conditions and during overflow conditions. These low concentrations are attributed to the extremely high infiltration which occurs in this system, dispite the fact that only about ten percent of the system has combined sewers.

Sampling of the flow under dry weather conditions indicated a BOD concentration of 18 mg/l. Sampling of the flow during storm overflow conditions indicated a BOD average value of about 16 mg/l.

The sanitary line which discharges into the chamber serves a vacant industrial complex. Whatever flow that discharges here is suspected of being either infiltration or inflow, which should be located and eliminated. This overflow, in turn, may then be eliminated.

OVERFLOW DATA EXTRACT

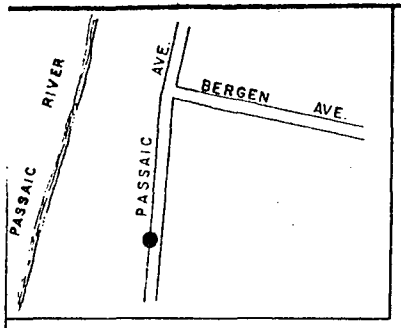
BERGEN AVENUE OVERFLOW CHAMBER

KEARNY

Chamber Location and Description

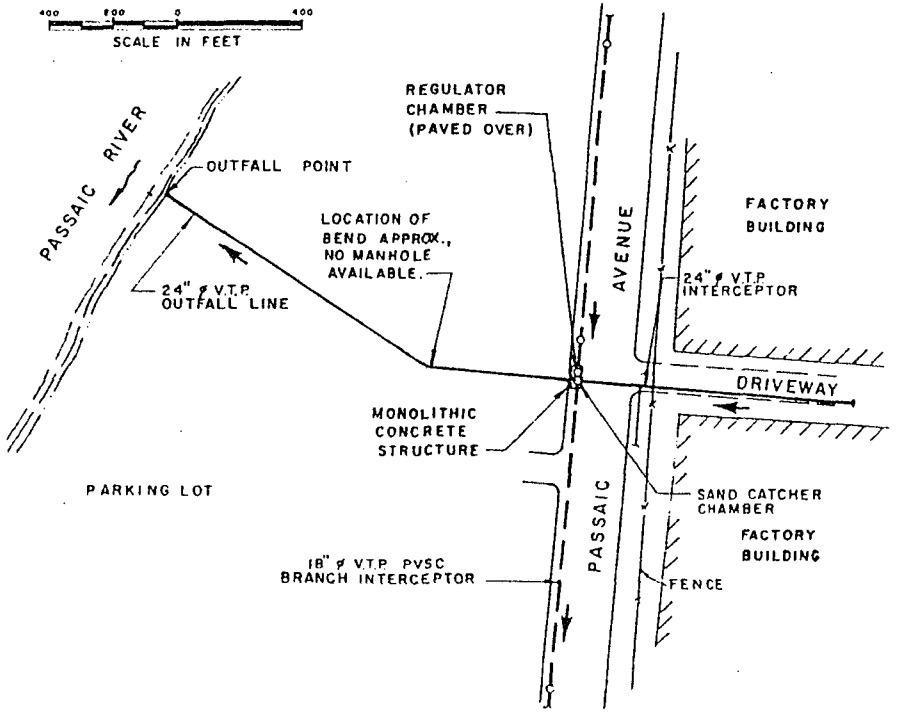
Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some industrial flow
Overflow Location (See Plate A):	in west side of Passaic Avenue about 500 ft. south of intersection of Bergen Avenue and Passaic Avenue
* District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
* Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none observed
Surcharge Effects:	none evident
* Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

* Note: Plate B unavailable through PVSC.



LOCATION PLAN

SCALE IN FEET



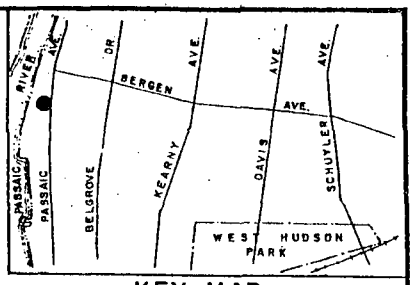
PLAN

SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. NO 1261 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

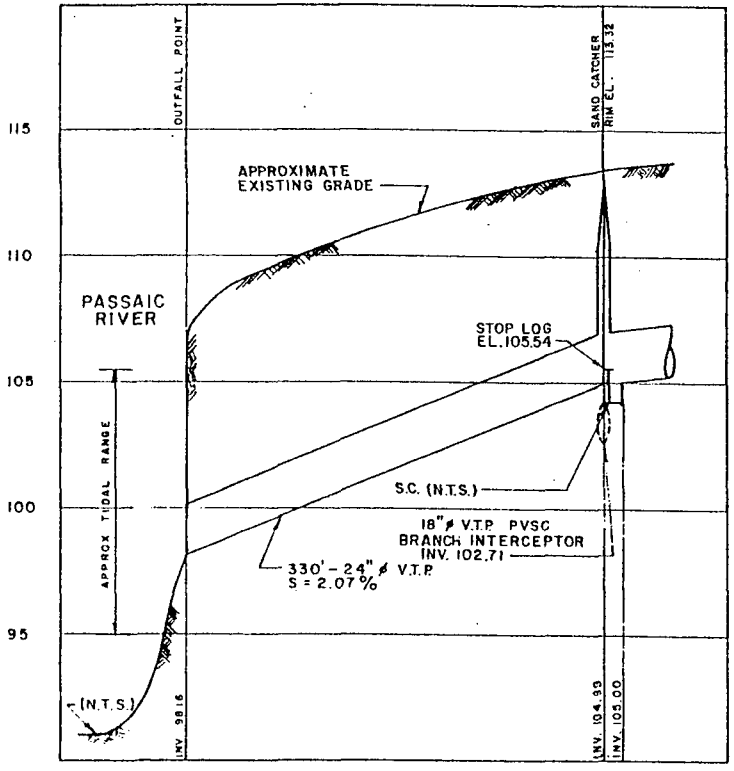
NOTE
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND
- → DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UP STREAM
- DN. STR. = DOWN STREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



KEY MAP

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-003

BERGEN AVENUE, KEARNY

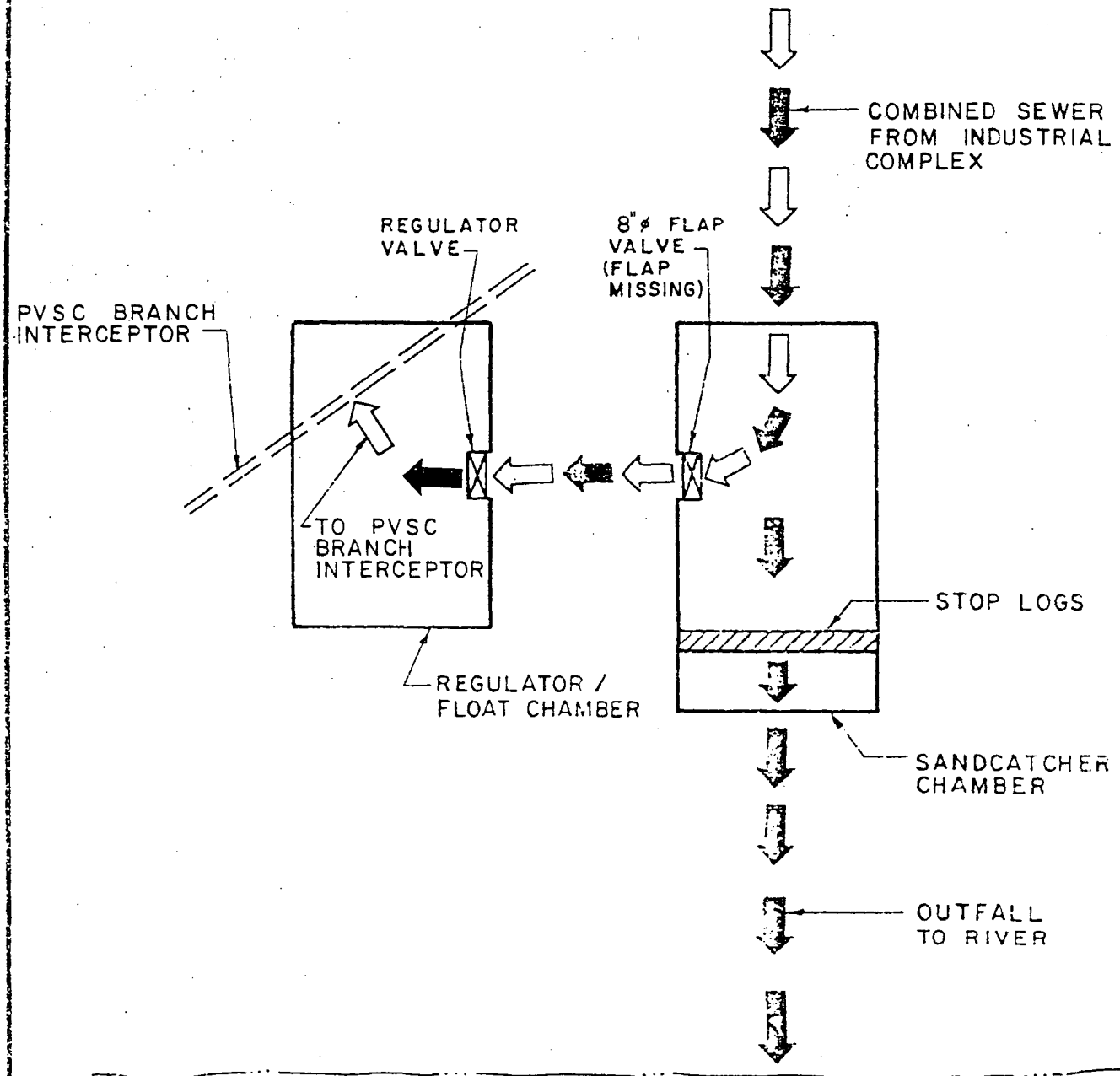
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190123

PLATE A



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE, KEARNY

SCHEMATIC

(019/K-003)

ELSON T. KILLAM ASSOCIATES INC.

946190124

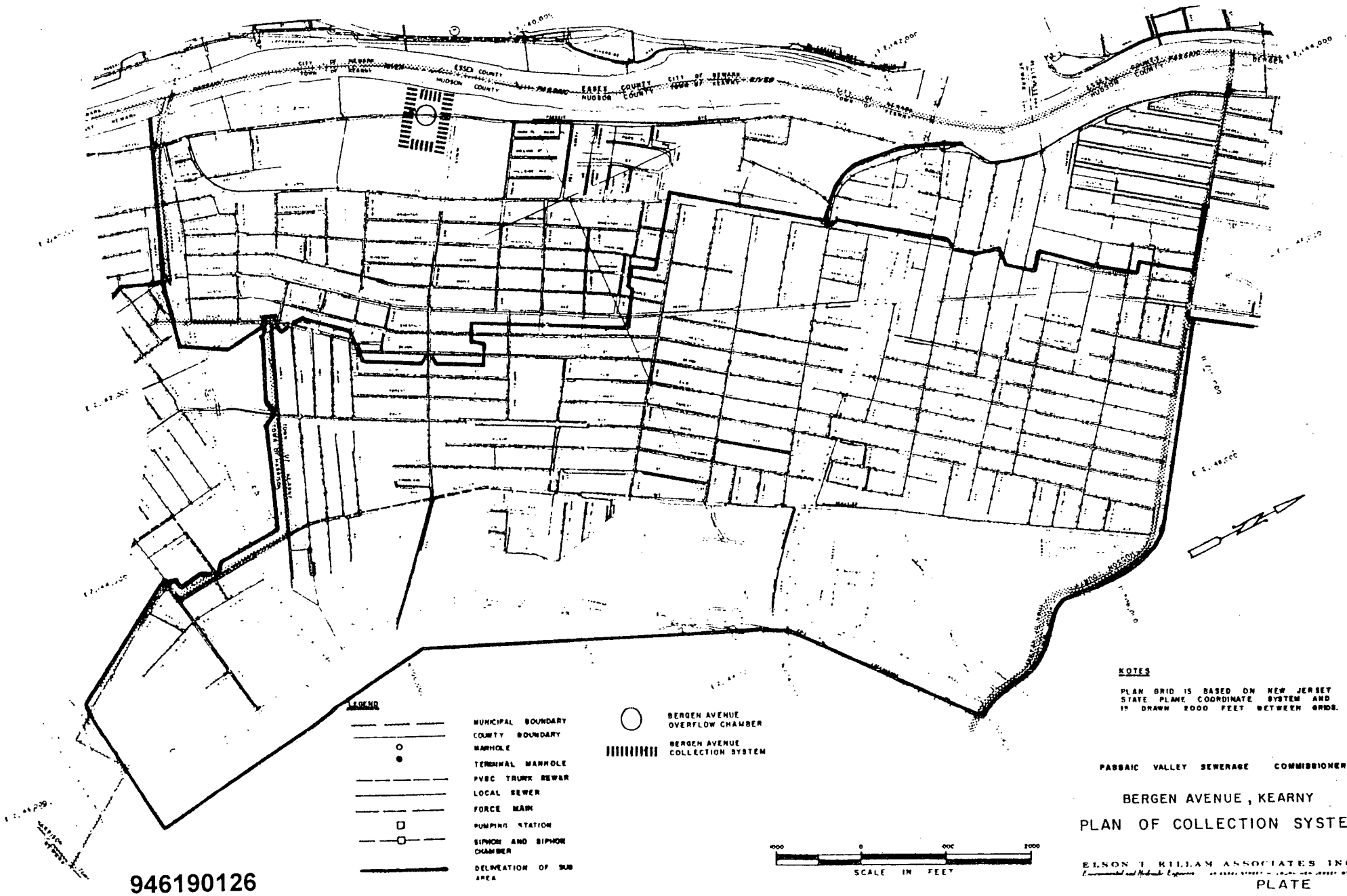
PLATE C

BERGEN AVENUE OVERFLOW CHAMBER K-003 (Cont'd.)

Condition of Regulator:	unknown-access manhole cover is paved over
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located downstream in sand catcher just before opening to outfall line
Tide Gate Condition:	no tide gate chambers at this location
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations). Plate B unavailable.

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.019 square miles-12 acres
Average Daily Flow	
Seasonal Dry Weather:	0.05 MGD (estimated)
Seasonal Wet Weather:	0.06 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	0.90 MGD
Approximate Length of Combined Sewers Serving District:	1,000 linear feet



PASSAIC VALLEY SEWERAGE COMMISSIONERS

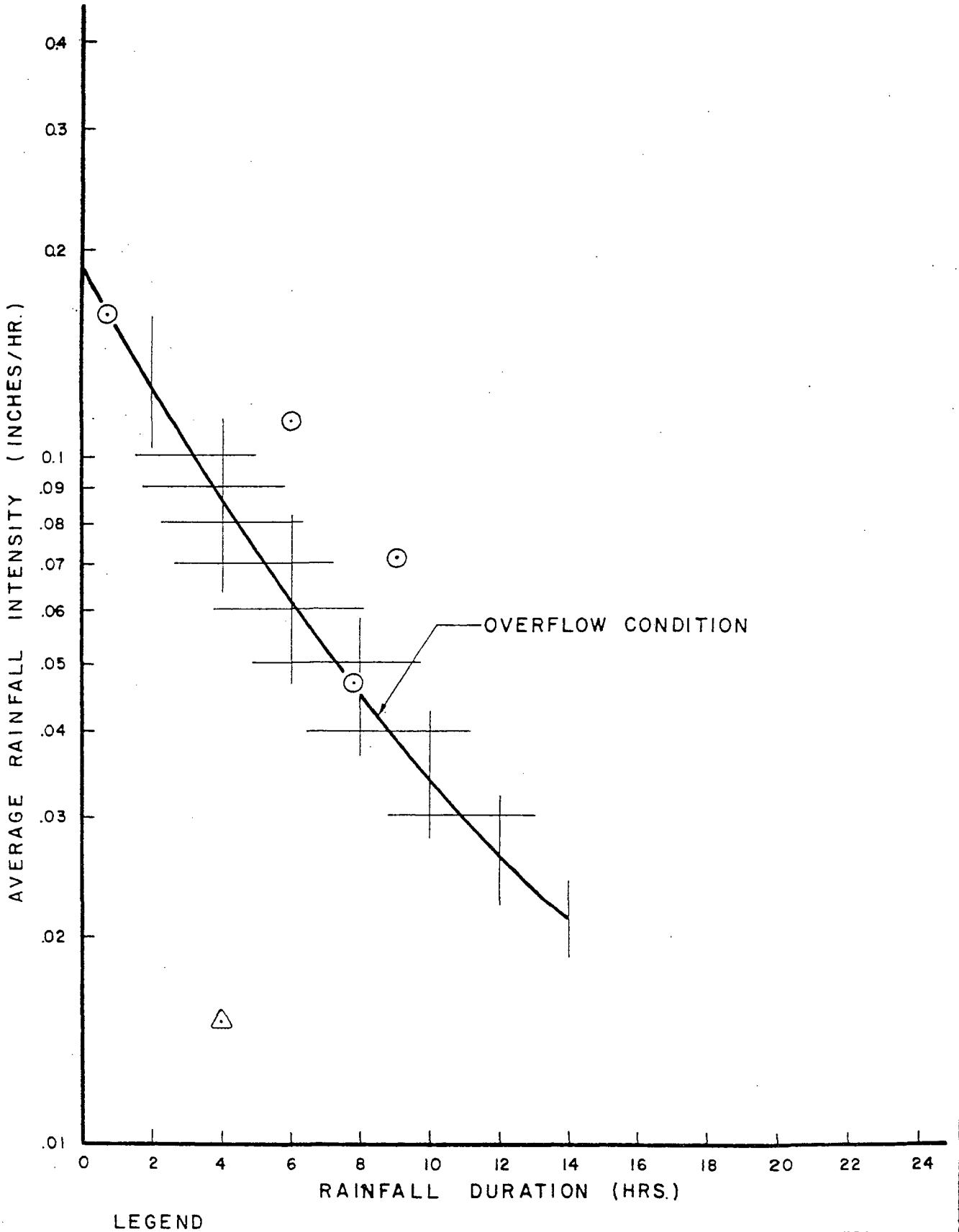
BERGEN AVENUE, KEARNY

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES INC

PLATE D

946190126



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

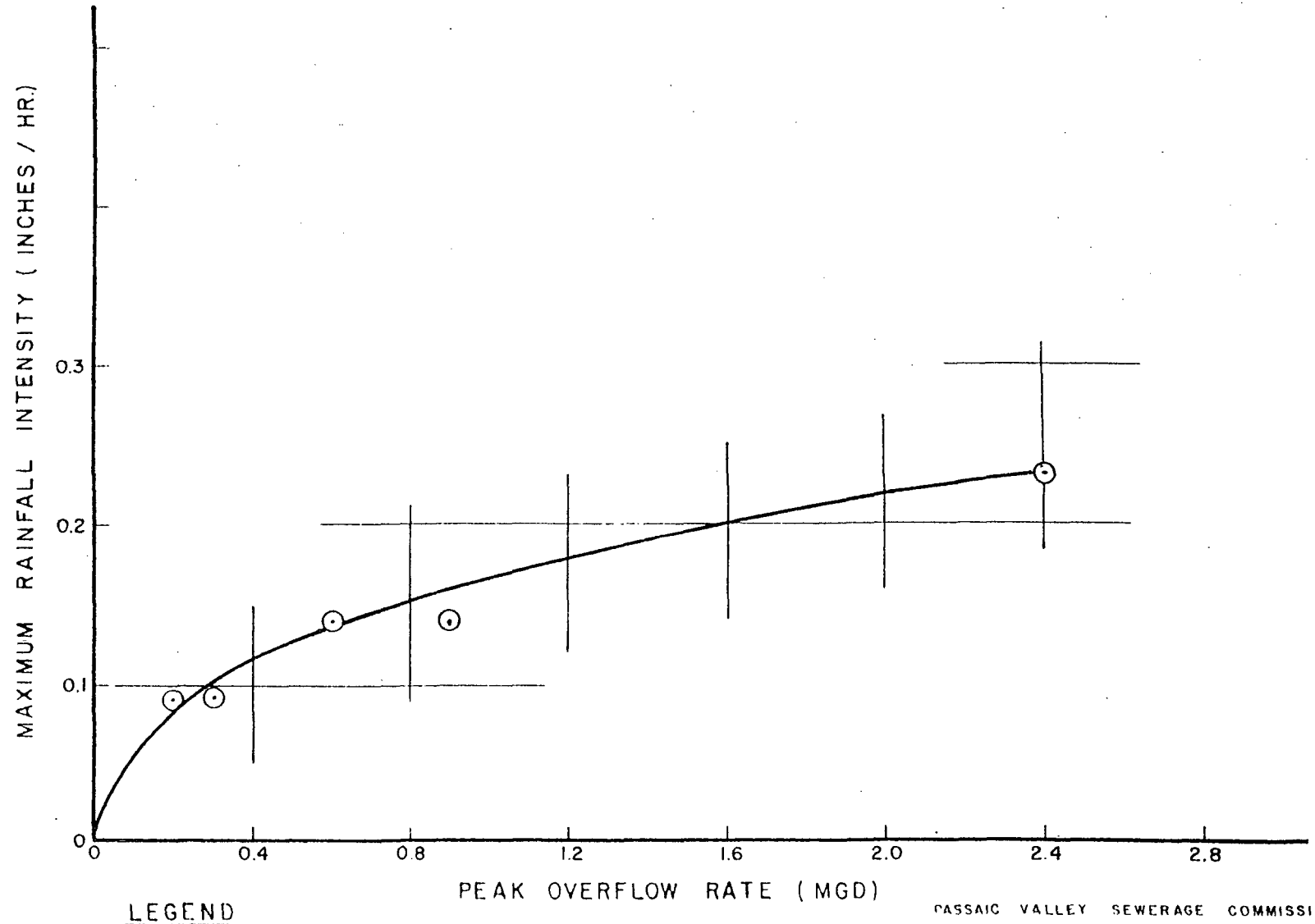
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 46 ESSEX STREET MILLBURN, NEW JERSEY 07041

946190127

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN, NEW JERSEY 07041

PLATE 5

946190128

PVSC Reference # D-174

Date: 4/17/75

Elson T. Killam Associates - Infiltration Studies
Bergen Avenue Overflow Chamber, Kearny - Sandcatcher
1505 - 4/1/75 to 1205 - 4/2/75

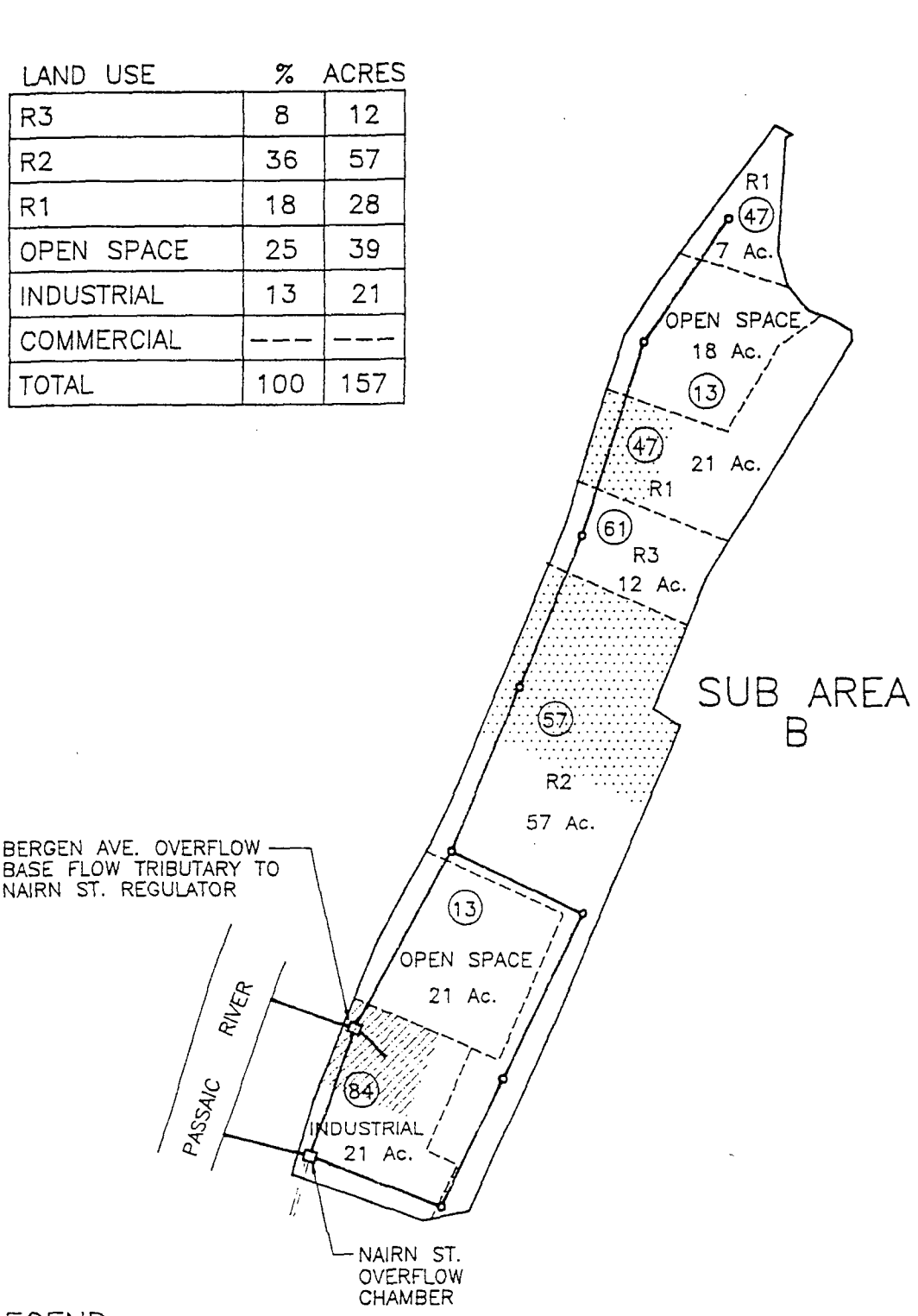
Sampler # 394 Set #37
Chamber # 019/K-003

BASELINE

24 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	-	110	110	100.0	85	13	15.3	75	88.3
2	8.1	0	-	-	40	9	22.5	-	-
3	8.2	0	-	-	53	15	28.3	-	-
4	8.3	0	-	-	32	10	31.2	-	-
5	8.5	0	-	-	36	7	19.4	25	69.5
6	8.5	0	-	-	20	6	30.0	11	55.0
7	8.6	0	-	-	32	7	21.9	15	46.9
8	8.6	0	-	-	28	6	21.4	16	57.2
9	8.5	0	-	-	24	6	25.0	9	37.5
10	8.4	0	-	-	28	5	17.8	11	39.3
11	8.4	0	-	-	20	5	25.0	11	55.0
12	8.4	0	-	-	24	5	20.8	16	66.7
13	8.7	0	-	-	20	7	35.0	10	50.0
14	8.5	0	-	-	20	5	25.0	11	55.0
15	8.4	0	-	-	16	6	37.5	14	87.4
16	8.6	0	-	-	16	6	37.5	10	62.5
17	8.7	0	-	-	24	6	25.0	14	58.3
18	8.7	0	-	-	24	6	25.0	9	37.5
19	8.6	0	-	-	28	6	21.4	15	53.5
20	8.4	0	-	-	36	8	22.2	11	30.6
21	8.5	0	-	-	40	9	22.5	34	85.0
22	-	0	-	-	57	15	26.4	-	-
							25.3		57.5

LAND USE	%	ACRES
R3	8	12
R2	36	57
R1	18	28
OPEN SPACE	25	39
INDUSTRIAL	13	21
COMMERCIAL	---	---
TOTAL	100	157



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- BERGEN AVE. OVERFLOW DRAINAGE BASIN
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
NAIRN STREET OVERFLOW
TOWN OF KEARNY

Killam
Associates • Consulting Engineers

FIGURE K-004

946190130

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

NAIRN AVENUE, KEARNY
K-004

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

NAIRN AVENUE OVERFLOW CHAMBER, KEARNY

This overflow chamber serves a tributary area of 176 acres. The area is provided entirely with combined sewers. The average daily dry weather flow is estimated to be about 0.54 MGD during dry weather months, and 0.69 MGD during wet weather months.

Metering and sampling facilities were in service in this chamber beginning on June 5, 1975 and extending through August 7, 1975. During this period of observation, 17 rainfalls occurred and overflows are estimated to have occurred on 15 occasions. It has been estimated that overflow will occur about 60 to 80 times per year based upon rainfall occurrences of 70 to 90 times per year.

It was found that approximately 0.09 inches per hour of rain was required to cause overflow. The volume of overflow was found to be very little, namely, about 0.1 MG, and the peak stormwater overflow rate was measured at only 2.6 MGD.

Sampling of the dry weather sewage at this chamber indicated a very dilute waste, with a suspended solids average of 58 mg/l and BOD values averaging about 78 mg/l. The sampling of the stormwater overflow was likewise found to be fairly dilute, with a suspended solids concentration of only 93 mg/l and a BOD of about 61 mg/l, based on average values.

These very low wastewater characteristics are attributed to high dilution in this district due to storm flows and infiltration.

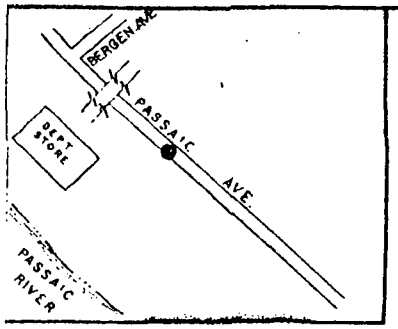
OVERFLOW DATA EXTRACT

NAIRN AVENUE OVERFLOW CHAMBER

KEARNY

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some industrial flow
Overflow Location (See Plate A):	in west side of Passaic Avenue about 1000 ft. north of intersection of Passaic Avenue and Marshall Street
District Outlet Sewer (See Plates A and B):	8" and 18" diameter VTP sewers
Outfall to River (See Plates A and B):	12" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none observed
Surcharge Effects:	surcharge observed at times due to capacity limitations
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

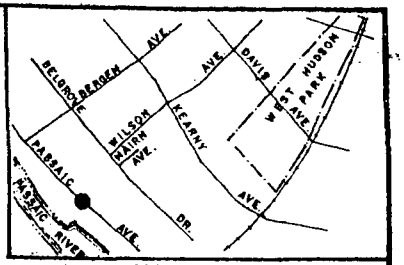
SCALE IN FEET

NOTE:

ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

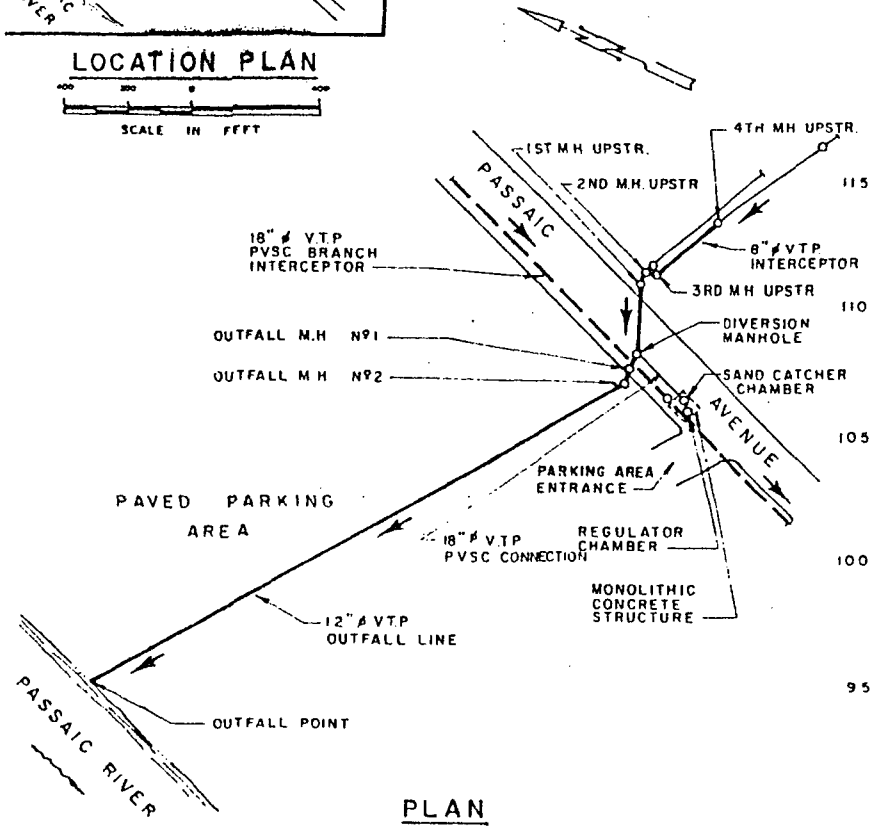
LEGEND

- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



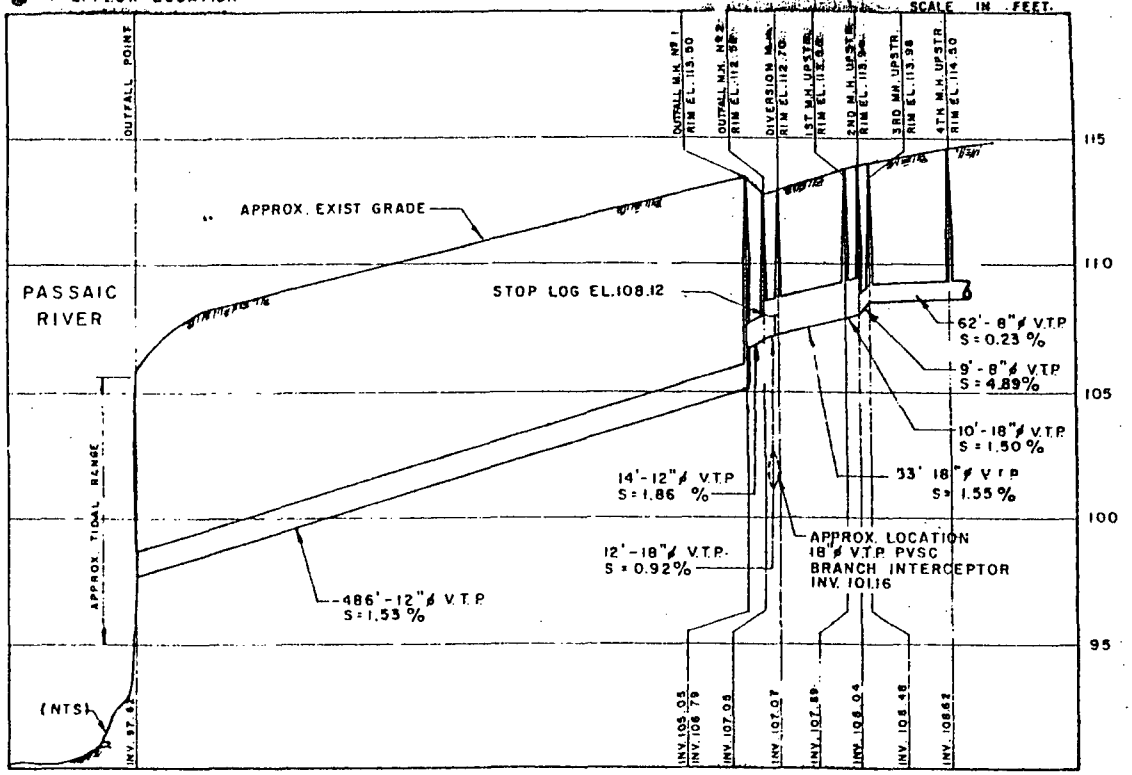
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON D.M. Nº 14 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-004

NAIRN AVENUE, KEARNY

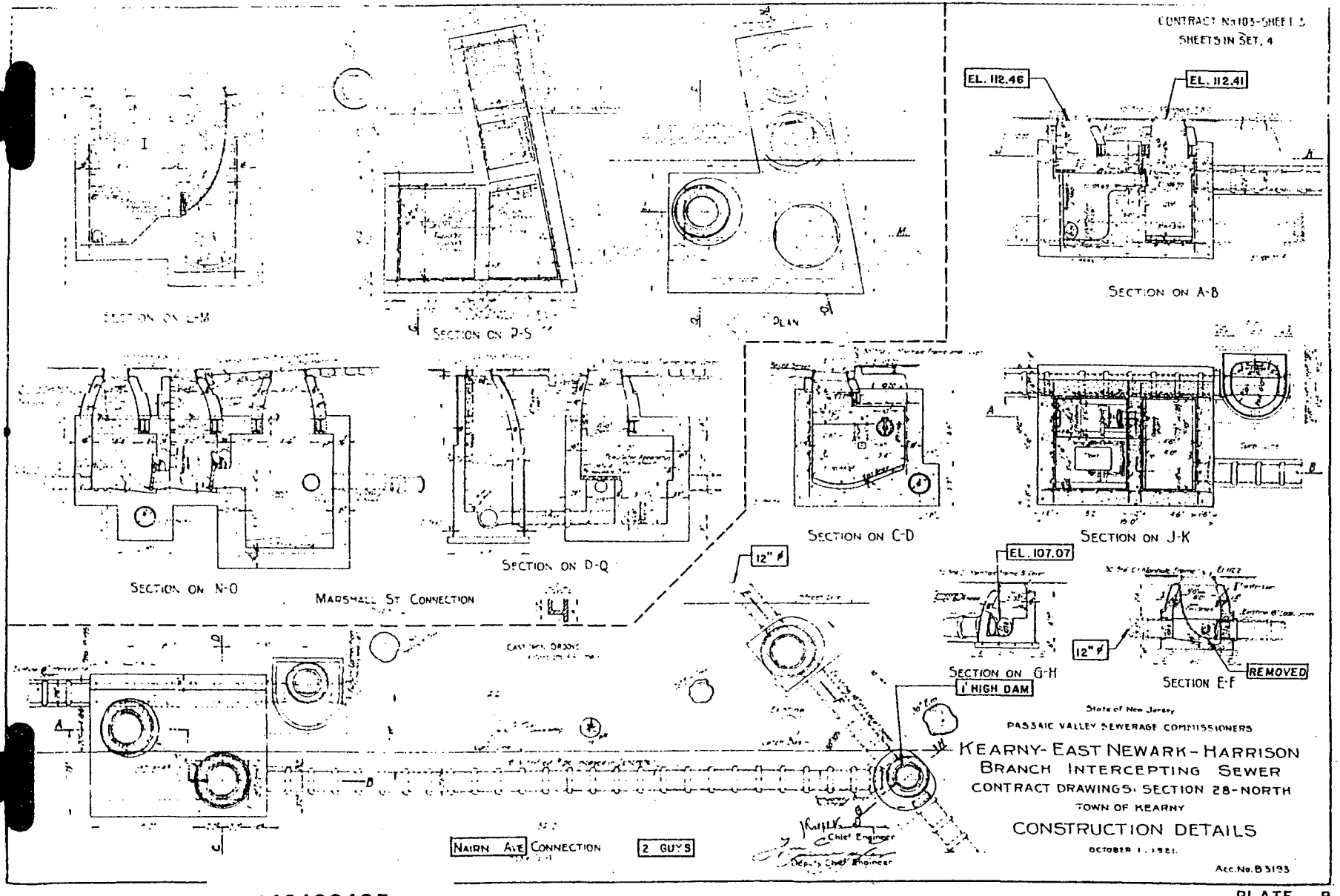
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

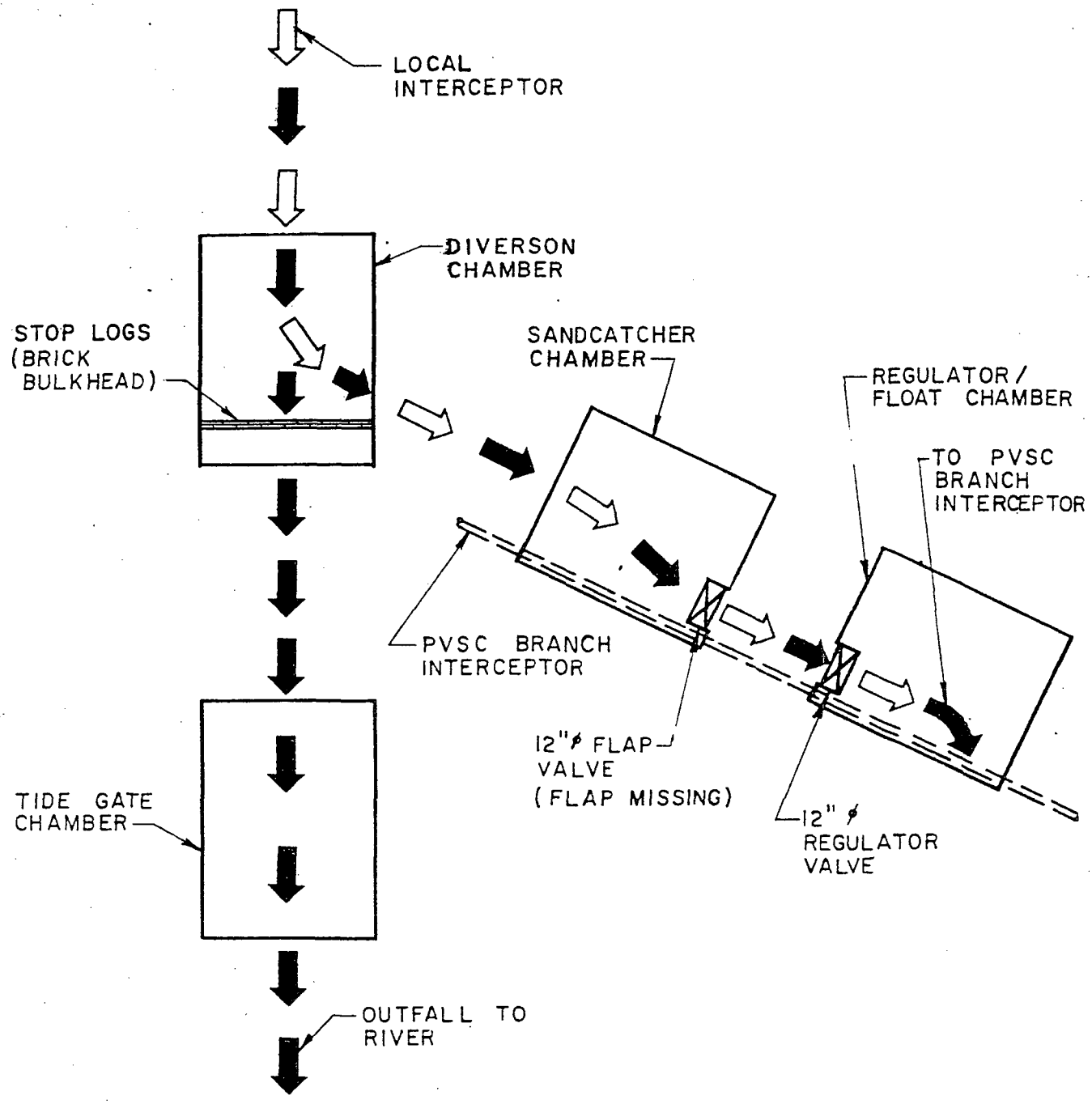
PLATE A

946190134



946190135

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NAIRN AVENUE, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190136

PLATE C

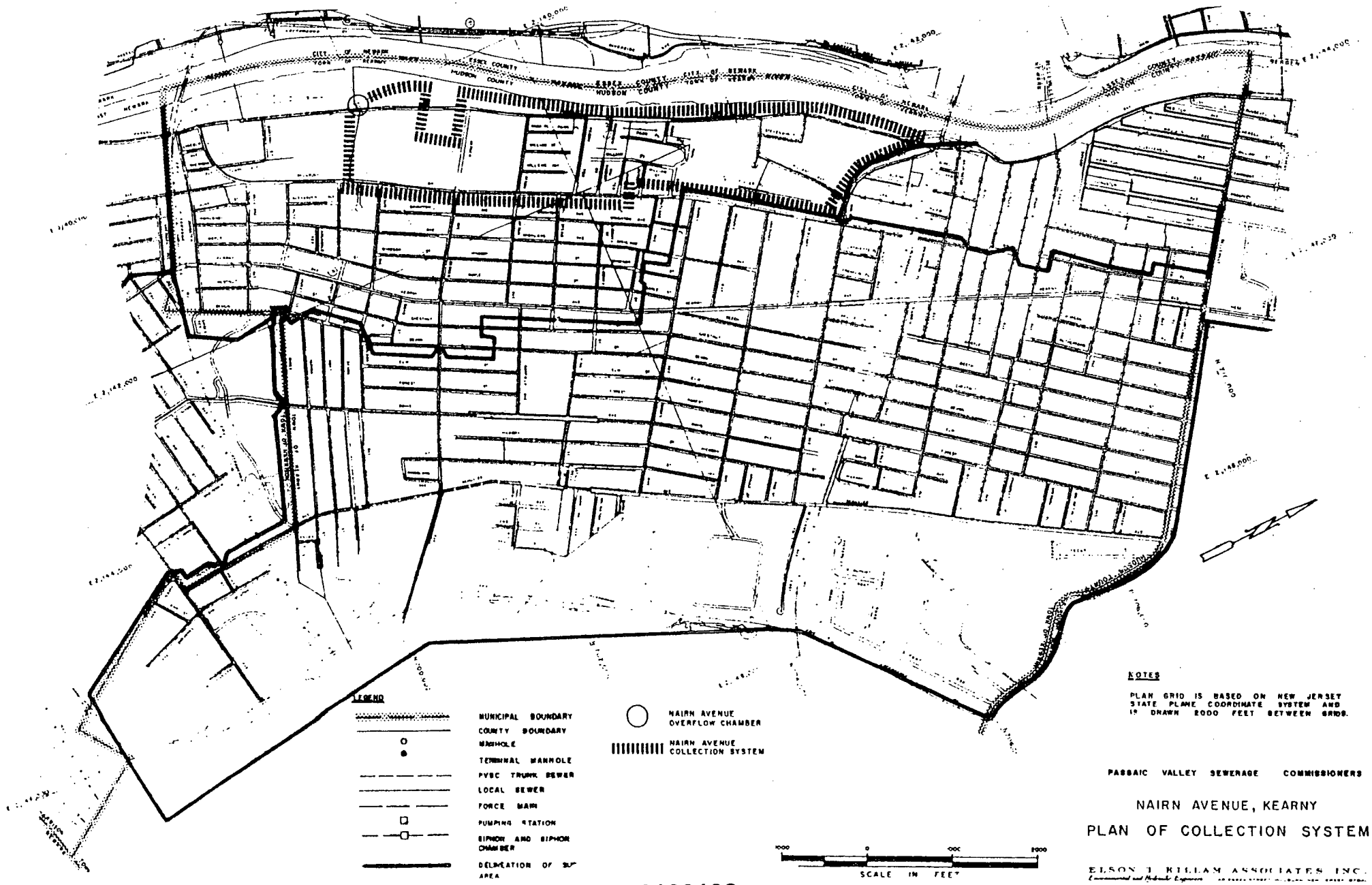
NAIRN AVENUE OVERFLOW CHAMBER K-004 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	brick and cement dam located in diversion manhole
Tide Gate Condition:	no tide gate chambers present at this location

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.275 square miles-176 acres
Average Daily Flow	
Seasonal Dry Weather:	0.54 MGD (estimated)
Seasonal Wet Weather:	0.69 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	3.2 MGD
Approximate Length of Combined Sewers Serving District:	24,600 linear feet



PASSAIC VALLEY SEWERAGE COMMISSIONERS

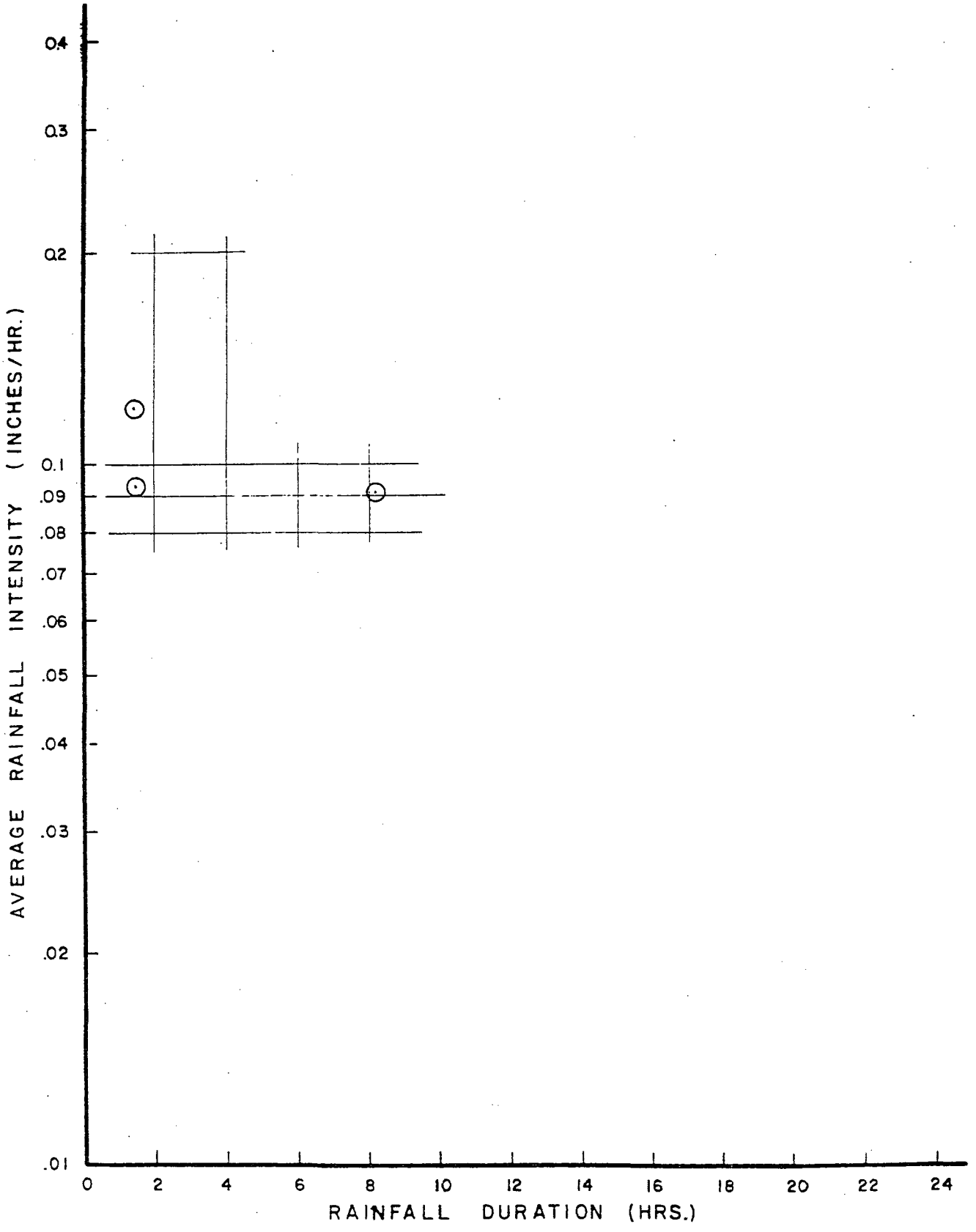
NAIRN AVENUE, KEARNY

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

PLATE D

946190138



LEGEND

⊙ OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NAIRN AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

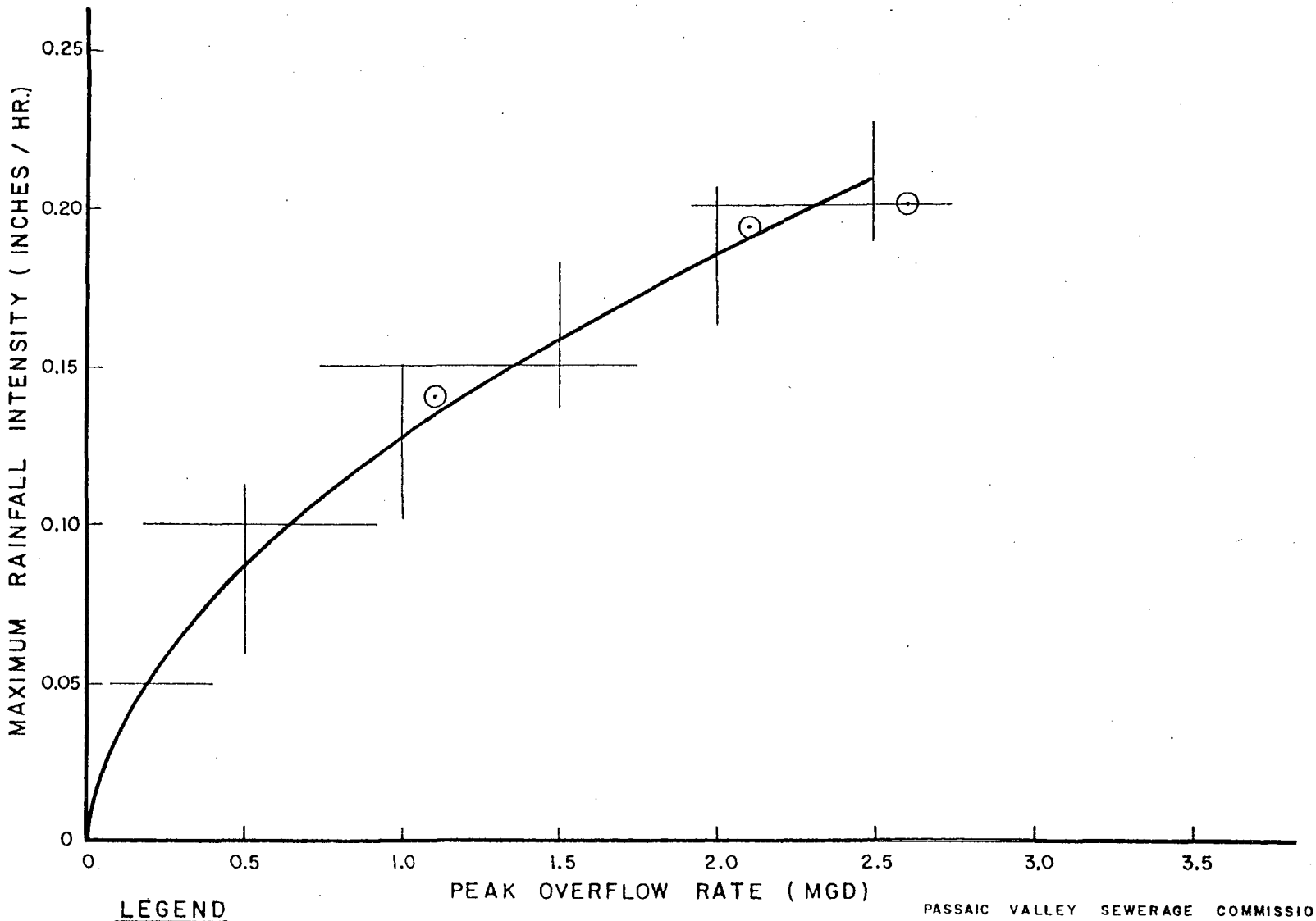
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190139

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NAIRN AVENUE, KEARNY
MAXIMUM RAINFALL INTENSITY VS. PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

PVSC Reference # H-235

Date: 8/21/75

Elson T. Killam Associates - Infiltration Studies
Nairn Avenue, Kearny - Dam Manhole
15:45 - 8/12/75 to 15:45 - 8/13/75

Chamber #020/K-004
Sampler # 397
Set # 107

24 SAMPLES — BASELINE

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	7.2	60	38	63.3	184	63	34.2	70	38.0
2	7.3	74	44	59.4	116	36	31.0	76	21.1
3	7.3	54	42	77.8	104	33	31.7	73	70.2
4	7.3	46	20	43.5	188	33	17.5	75	39.9
5	7.2	56	46	82.2	100	48	48.0	70	70.0
6	7.1	100	92	92.0	248	78	31.4	201	81.1
7	7.1	76	52	68.4	140	63	45.0	102	72.8
8	7.2	48	34	70.8	96	28	29.2	84	87.5
9	7.3	52	42	80.8	68	24	35.3	45	66.2
10	7.4	36	28	77.8	76	24	31.6	45	59.3
11	7.5	42	34	81.0	40	16	40.0	-	-
12	7.5	42	30	71.5	32	14	43.8	24	75.0
13	7.5	14	14	100.0	28	10	35.7	14	50.0
14	7.6	32	32	100.0	24	9	37.5	18	75.0
15	7.7	16	16	100.0	32	8	25.0	20	62.5
16	7.7	36	28	77.8	20	12	60.0	18	90.0
17	8.0	56	36	64.3	32	11	34.4	25	78.2
18	7.7	48	44	91.7	36	13	36.1	27	75.0
19	7.4	110	62	53.8	92	31	33.7	69	75.0
20	7.3	102	78	76.4	120	44	36.6	-	-
21	7.3	78	68	87.2	740	230	31.1	458	62.0
22	7.3	52	42	80.8	124	42	33.9	78	62.8
23	7.5	66	64	97.0	116	36	31.0	63	54.2
24	7.4	86	80	93.1	148	42	28.4	51	34.4
							35.1		60.9

946190141

P.V.S.C. Reference # L-50 Date 12/12/74

Elson Killam Associates-Infiltration Studies - Set #1
Nairn Place, Kearny 020/K - 004
1:30 P.M. 12/10/74 to 1:55 P.M. 12/11/74

24 SAMPLES — Baseline

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	7.8	96	86	89.6	484	132	27.3	287	59.4
2	7.9	22	22	100.0	180	51	28.3	103	57.2
3	7.9	21	21	100.0	136	45	33.1	93	68.3
4	7.9	20	20	100.0	240	68	28.3	145	60.4
5	8.0	20	20	100.0	168	48	28.6	113	61.3
6	7.9	26	26	100.0	252	60	23.8	128	50.8
7	7.9	16	16	100.0	224	51	22.8	163	72.8
8	7.8	14	14	100.0	104	42	40.4	-	-
9	7.9	10	10	100.0	100	39	39.0	-	-
10	7.9	16	16	100.0	128	39	30.5	-	-
11	7.9	10	10	100.0	92	33	35.9	-	-
12	7.9	13	13	100.0	40	18	45.0	-	-
13	8.1	8	8	100.0	44	15	34.1	-	-
14	8.0	8	8	100.0	36	17	47.2	-	-
15	8.2	11	11	100.0	28	15	53.6	-	-
16	8.0	10	10	100.0	32	17	53.1	-	-
17	8.0	16	16	100.0	64	18	28.1	-	-
18	7.9	18	18	100.0	120	39	32.5	-	-
19	7.9	50	50	100.0	204	66	32.4	-	-
20	7.9	52	52	100.0	224	63	28.1	-	-
21	7.6	40	40	100.0	252	66	26.2	155	65.0
22	7.7	54	54	100.0	260	66	25.4	-	-

P.V.S.C. Reference # L-50 Date 12/10/74

Elson Killam Associates-Infiltration Studies - Set #1
Nairn Place, Kearny 020/K - 004
1:30 P.M. 12/10/74 to 1:55 P.M. 12/11/74

24 SAMPLES BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D/B.O.D	B.O.D/C.O.D.
23	7.6	24	24	100.0	324	102	31.5	187	57.7
24	7.9	40	40	100.0	264	75	28.4	152	57.6
						Average	33.5		61.1

946190143

PVSC Reference # F-215

Date: 6-16-75

Elson T. Killam Associates - Infiltration Studies
Nairn Avenue, Kearny - Diversion Manhole
1405 - 6-11-75 to 1410 6-12-75

Sampler No. 354
Set No. 16
Chamber No. 020/K-004

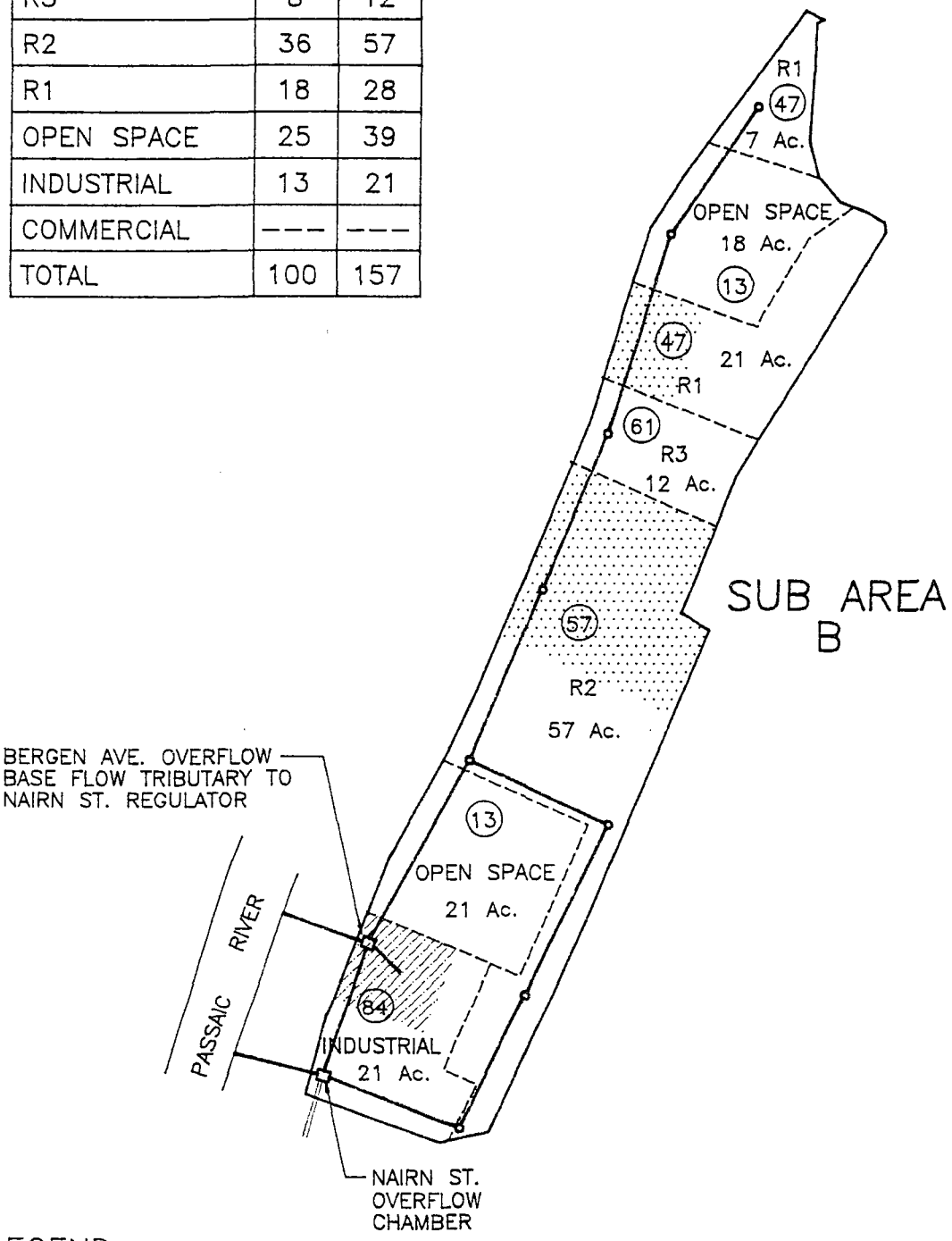
Rainfall of 6/11/75 - 6/12/75

BASELINE and STORM CONDITIONS

21 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	7.1	118	72	61.0	461	80	17.3	-	-
2	7.2	109	52	47.7	206	51	24.7	-	-
3	7.1	92	66	71.8	182	33	18.1	-	-
4	7.2	116	104	89.8	174	42	24.1	-	-
5	7.2	61	50	82.0	295	60	20.3	-	-
6	7.2	124	75	60.5	210	42	20.0	-	-
7	7.3	77	57	74.1	149	33	22.1	-	-
8	7.4	21	16	76.2	97	24	24.7	-	-
9	7.3	54	45	83.3	109	22	20.2	-	-
10	7.5	100	55	55.0	77	18	23.4	-	-
11	7.5	19	8	42.1	81	16	19.8	-	-
12	7.5	0	-	-	40	9	22.5	-	-
13	7.4	68	50	73.5	73	22	30.1	-	-
14	7.4	51	30	58.8	109	26	23.9	-	-
15	7.3	50	35	70.0	105	21	20.0	-	-
16	7.2	50	30	60.0	73	20	27.4	-	-
17	7.1	64	36	56.3	129	24	18.6	-	-
18	7.1	28	19	67.9	93	13	14.0	-	-
19	7.1	48	13	27.1	113	15	13.3	-	-
20	8.1	872	854	97.8	893	560	62.5	-	-
21	8.2	1526	1497	98.1	1353	1000	73.8	-	-
						Average	25.8		

LAND USE	%	ACRES
R3	8	12
R2	36	57
R1	18	28
OPEN SPACE	25	39
INDUSTRIAL	13	21
COMMERCIAL	---	---
TOTAL	100	157



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- BERGEN AVE. OVERFLOW DRAINAGE BASIN
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
NAIRN STREET OVERFLOW
TOWN OF KEARNY

Killam Associates Consulting Engineers

946190145

FIGURE K-004

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

MARSHALL STREET, KEARNY
K-005

1976

ELSON T. KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers 46 ESSEX STREET MILLBURN NEW JERSEY 07041

MARSHALL STREET OVERFLOW CHAMBER, KEARNY

The overflow chamber serving this district of only 24 acres is served with a combined sewer system. The estimated dry weather flow is only about 0.09 MGD and, in wet weather months, about 0.12 MGD.

Metering and sampling facilities were installed in this chamber from February 5, 1975 through April 3, 1975, during which time rainfall occurred on thirteen occasions. Overflows, however, occurred only on six occasions. It was found that the overflows occurred whenever the rainfall exceeded about 0.05 inches per hour.

The peak overflow rate was found to be about 5.0 MGD, but the actual volume of overflow under the worst recorded storm was only about 0.4 MG. It has been estimated that overflow will occur at this chamber from 30 to 40 times per year on the basis of 70 to 90 rainfall occurrences per year.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

Samples taken of the dry weather flow show a typical domestic sewage with suspended solids of only 120 mg/l and a BOD of about 206 mg/l, based on average values.

During storm flow, the suspended solids were slightly higher, ranging from a low of 66 mg/l to a high of 418 mg/l, with the BOD ranging from a low of 16 mg/l to a high of 167 mg/l.

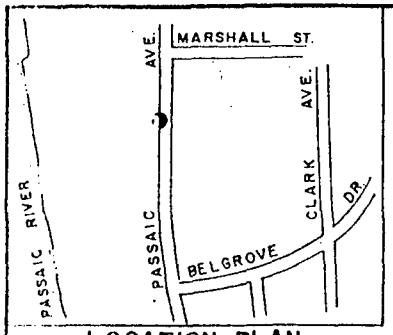
OVERFLOW DATA EXTRACT

MARSHALL STREET OVERFLOW CHAMBER

KEARNY

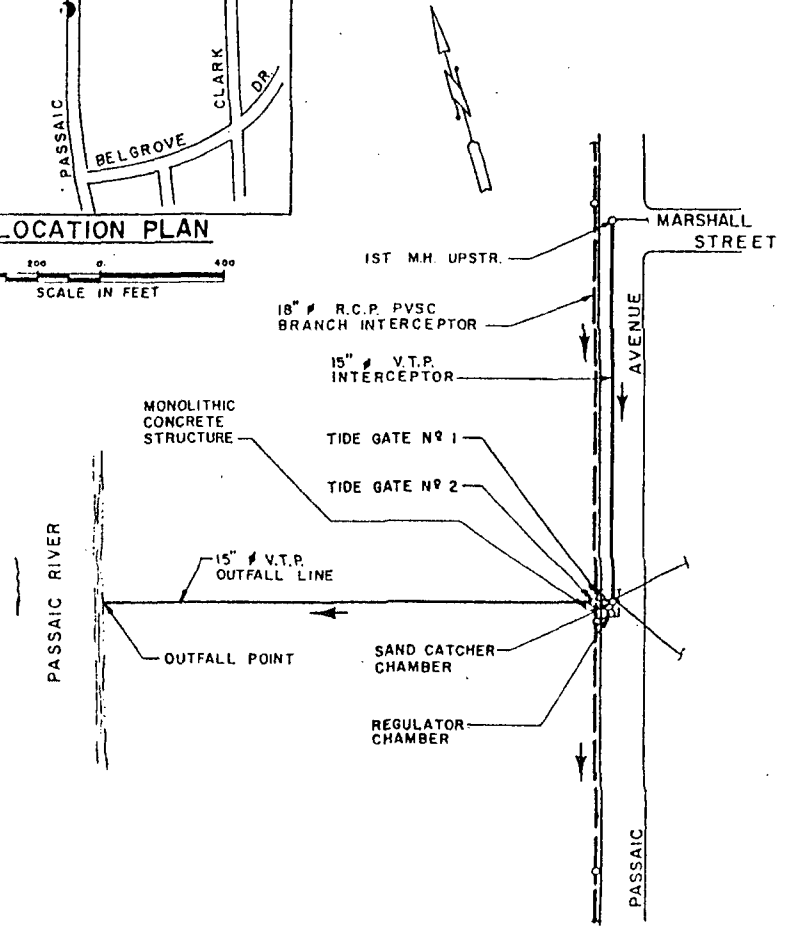
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	Heavily industrialized and commercial area
Overflow Location (See Plate A):	In west side of Passaic Avenue approx. 300 feet south of intersection of Marshall Street and Passaic Avenue
District Outlet Sewer (See Plates A and B):	15" diameter vitrified tile pipe
Outfall to River (See Plates A and B):	15" diameter vitrified tile pipe
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed due to capacity limitations and/or tide gate closure during high tide conditions
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

SCALE IN FEET



PLAN

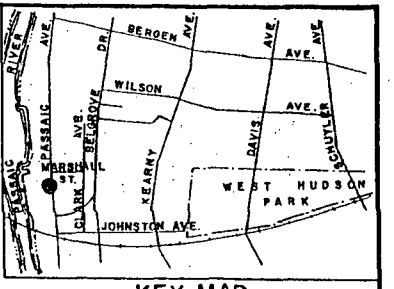
SCALE IN FEET

NOTE

ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND

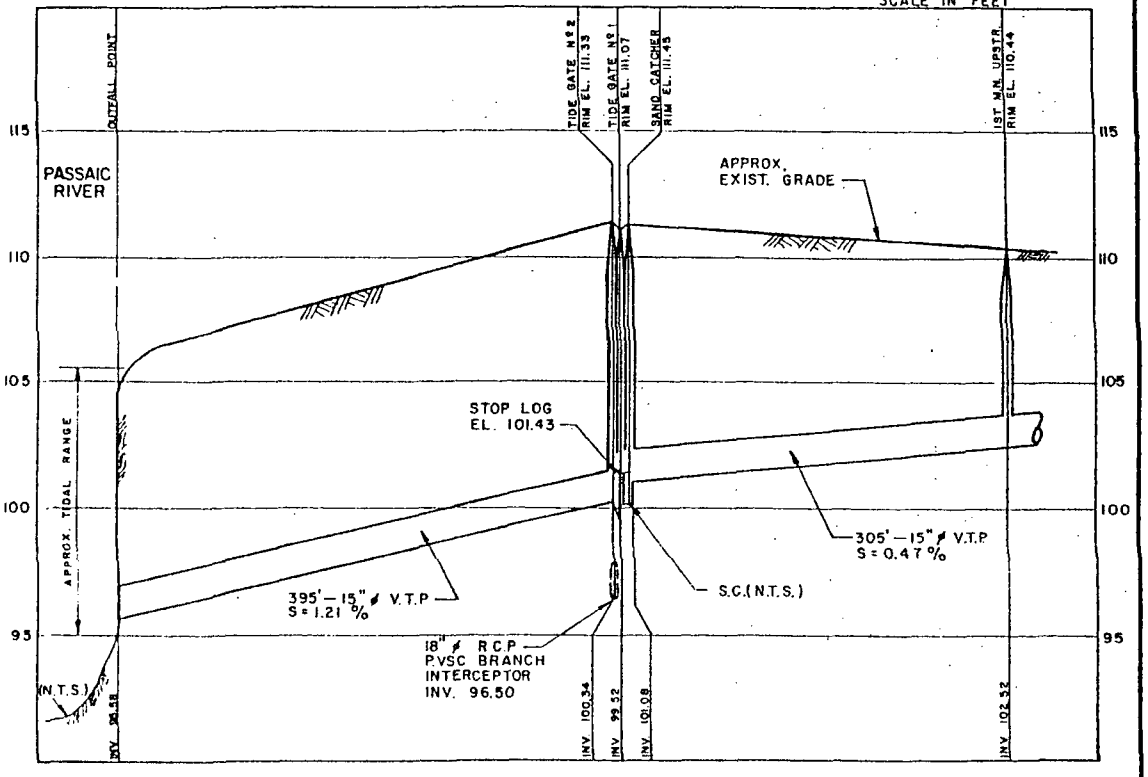
→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATE
UP STR. = UPSTREAM
DN. STR. = DOWNSTREAM
N.T.S. = NOT TO SCALE
V.T.P. = VITRIFIED TILE PIPE
R.C.P. = REINFORCED CONCRETE PIPE
● = OVERFLOW LOCATION



KEY MAP

2000 1000 0 2000

SCALE IN FEET



PROFILE

100 50 0 100

HORIZ SCALE IN FEET

0 4

VERT. SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-005

MARSHALL STREET, KEARNY

PLAN AND PROFILE

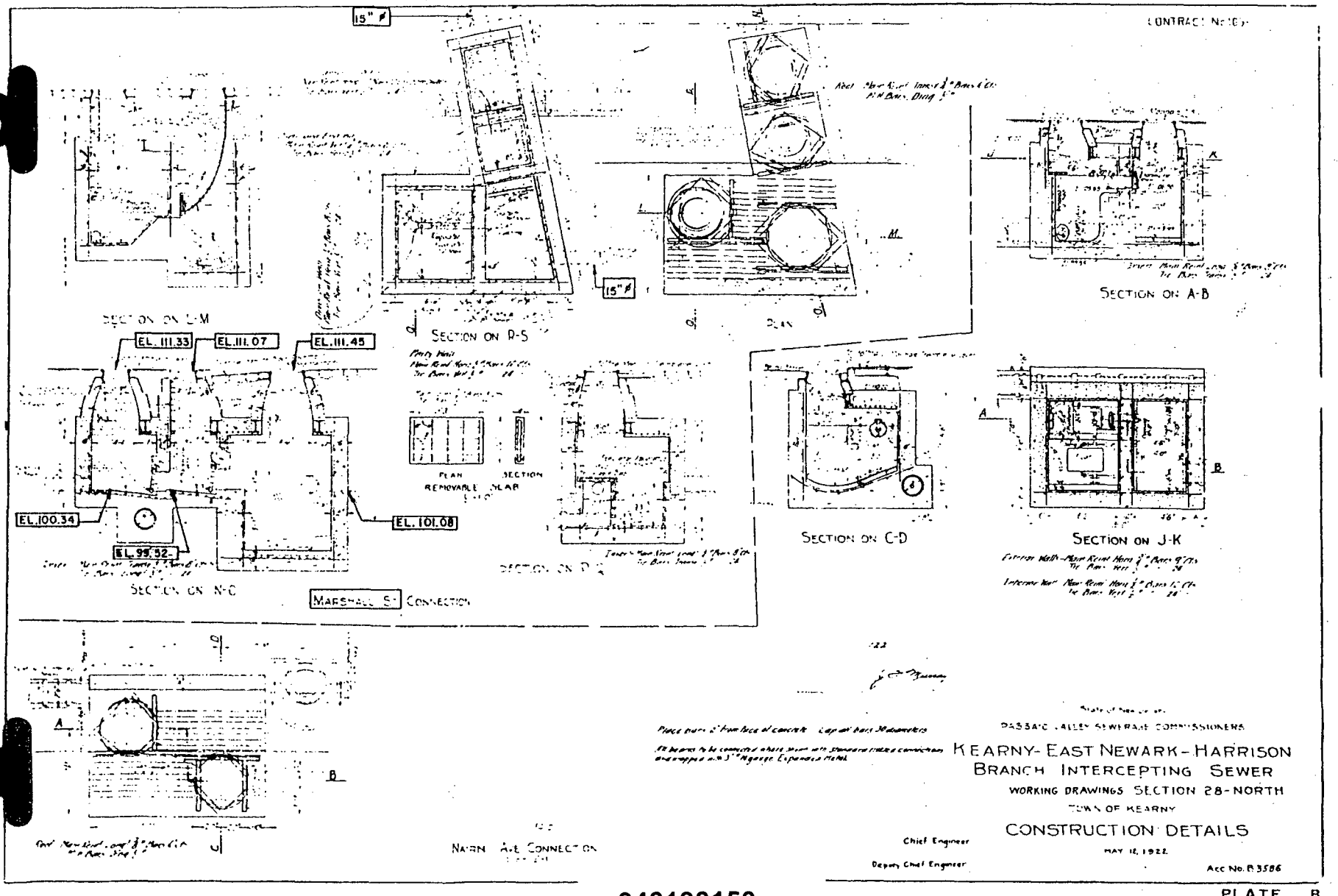
ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

All elevations based on mean datum as established by New Jersey Geodetic Control Survey. For location and description see appendix.

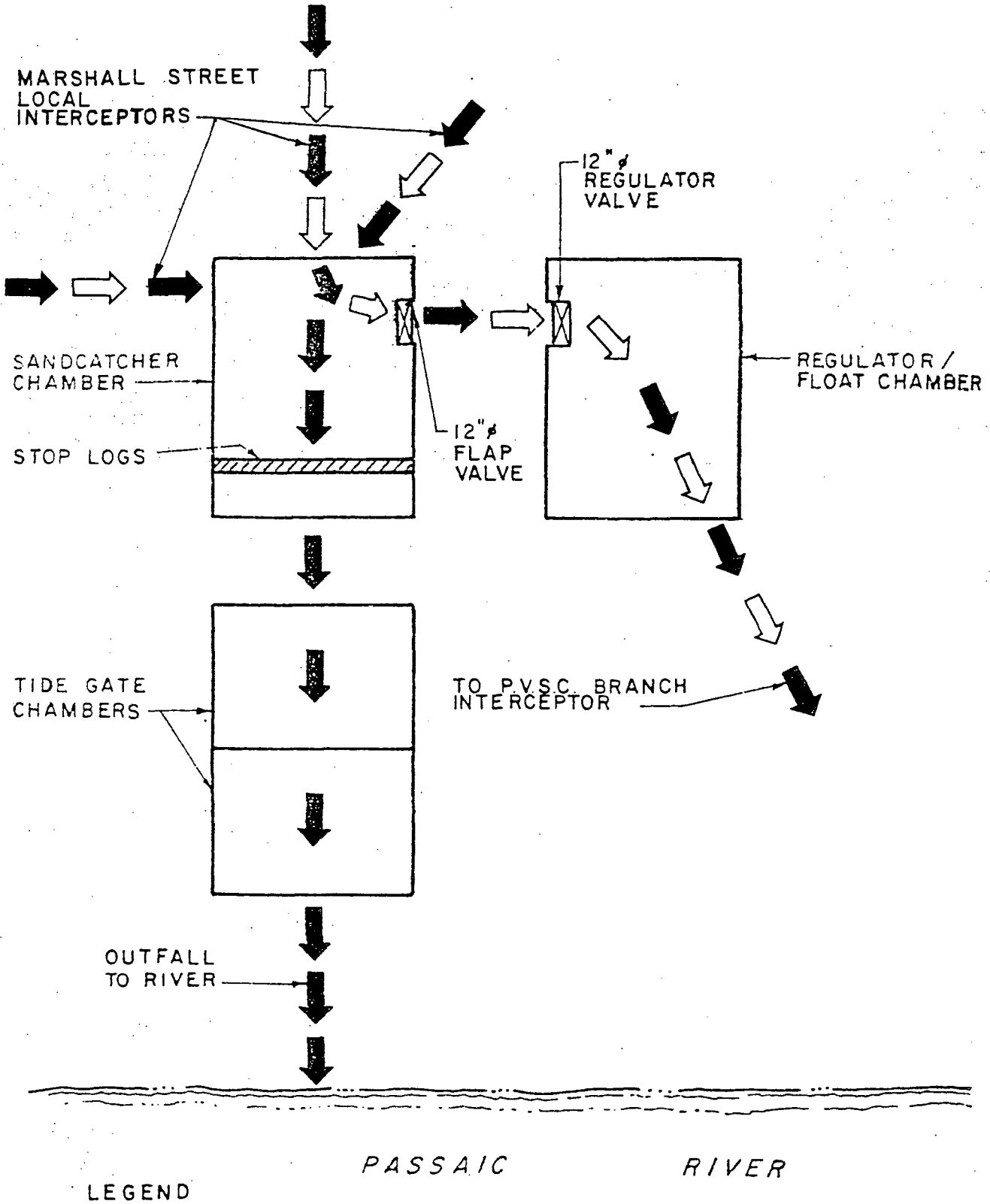
946190149

PLATE A



946190150

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MARSHALL STREET, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

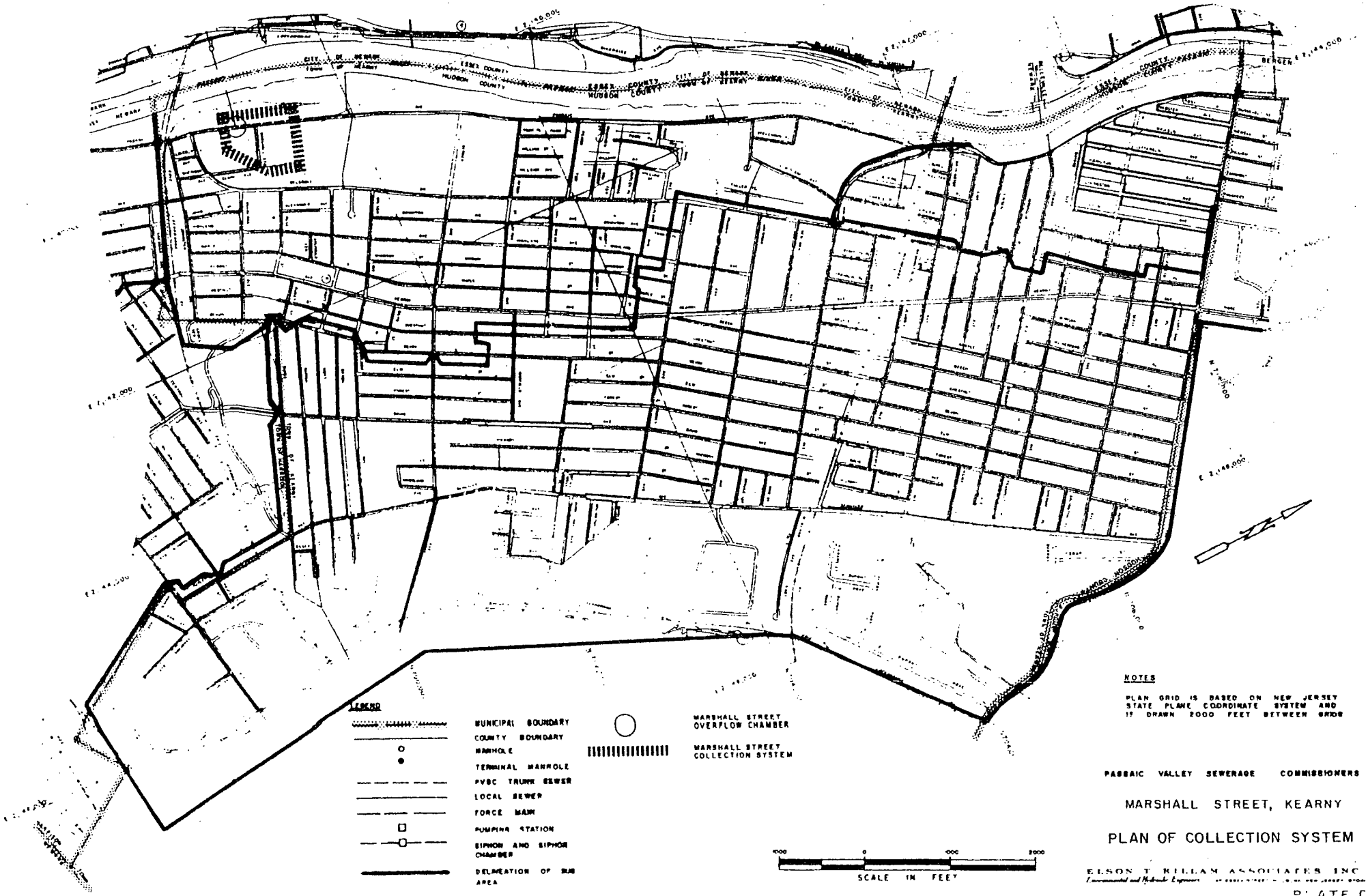
MARSHALL STREET OVERFLOW CHAMBER K-005 (Cont'd)

Condition of Regulator:	Appears inoperable
Special Actions Required:	None
Overflow Stop Log/Dam Condition:	Stop logs located at downstream end of sand catcher chamber before opening to first tide gate chamber
Tide Gate Condition:	both tide gates leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.038 square miles - 24 acres
Average Daily Flow	
Seasonal Dry Weather:	0.09 MGD (estimated)
Seasonal Wet Weather:	0.12 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	2.5 MGD
Approximate Length of Combined Sewers Serving District:	3,300 linear feet



NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

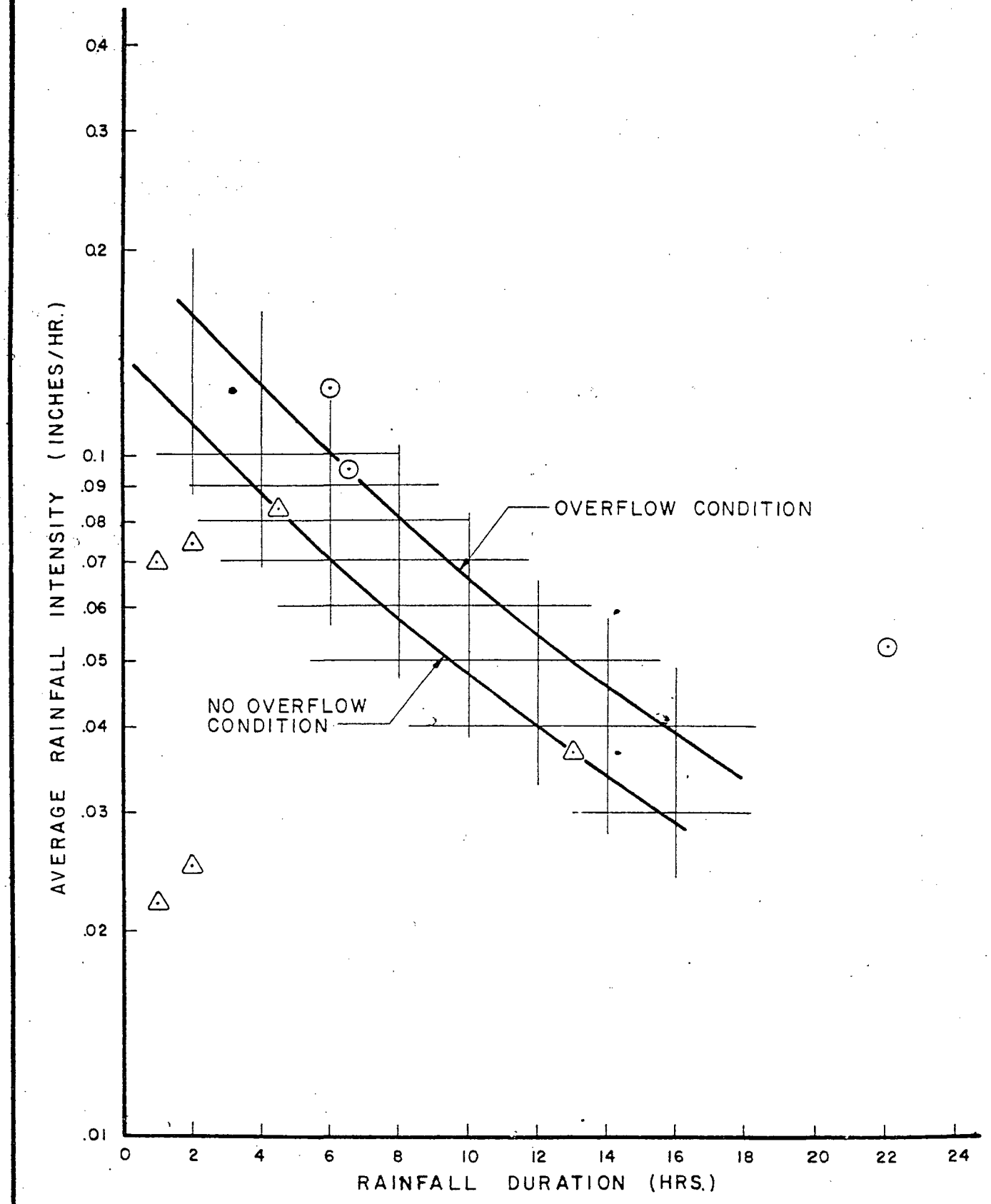
MARSHALL STREET, KEARNY

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

PLATE C

946190153



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MARSHALL STREET, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

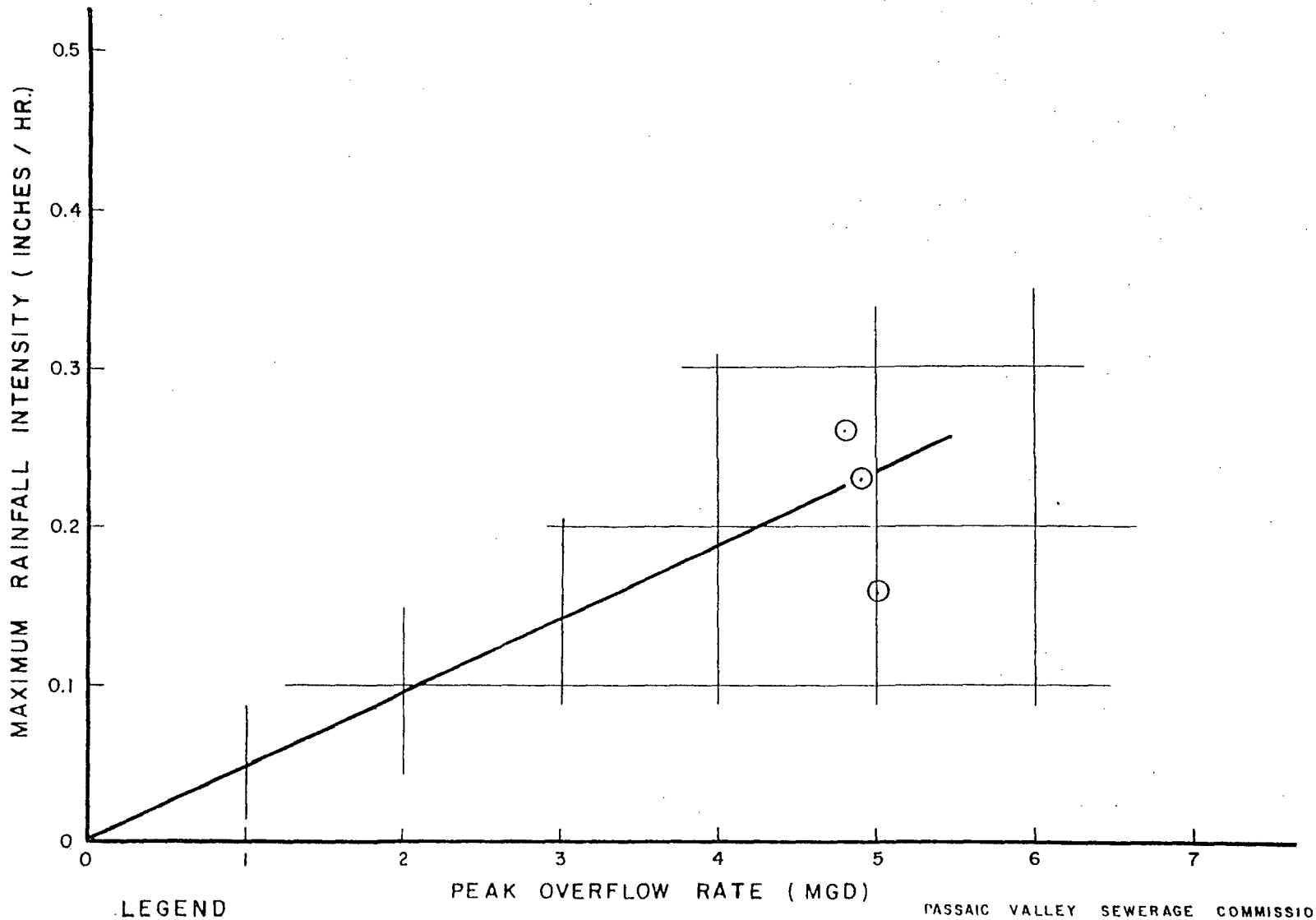
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190154

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MARSHALL STREET, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

(12)

946190155

P.V.S.C. Reference # L-29 Date

Elson Killam Associates-Infiltration Studies -Set #16-- December 5, 1974
Marshall Street, Harrison-Diversion Manhole- Upstream from Sandcatcher
3:20 P. M. 12-3-74 to 1:57 A. M. 12-4-74

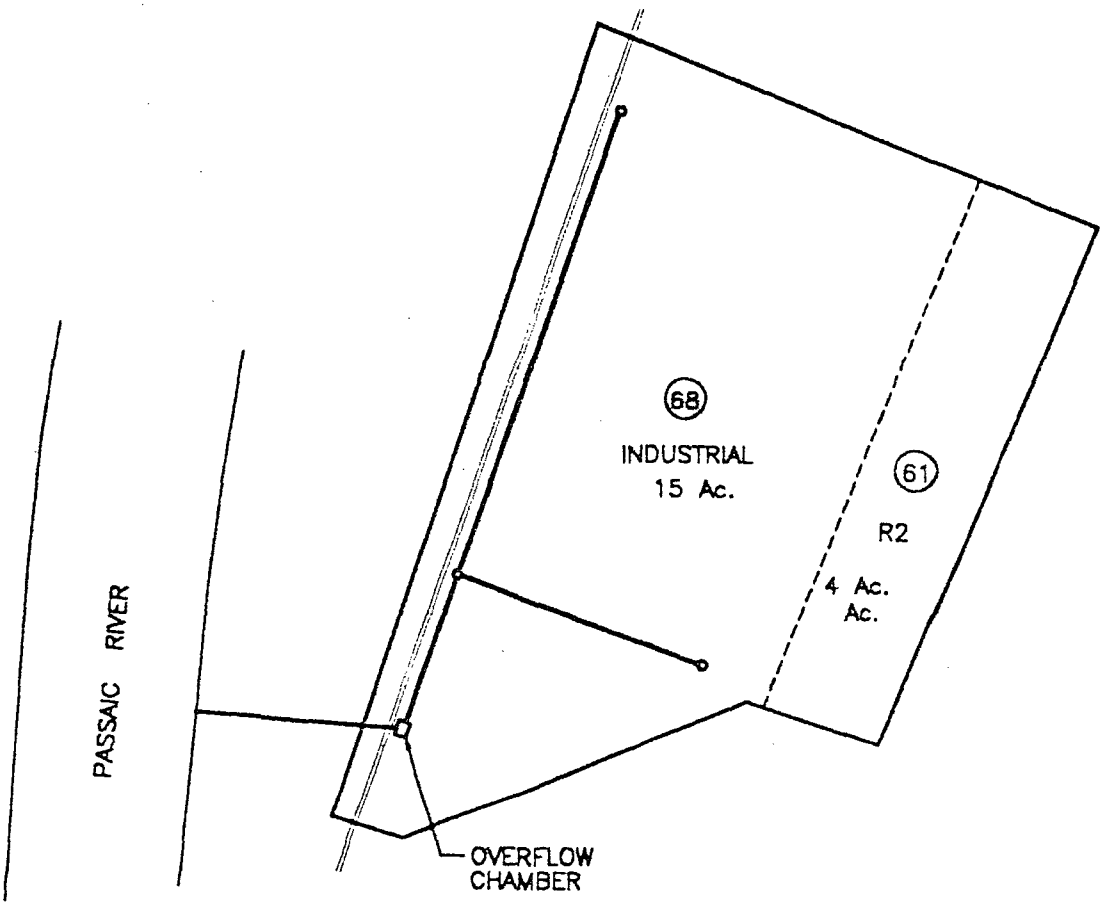
23 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./ C.O.D.	B.O.D	B.O.D/ C.O.D.
1	7.6	374	170	45.3	602	162	27.0	288	47.9
2	7.5	232	164	70.2	889	275	29.9	470	53.0
3	9.0	78	78	100.0	497	162	32.5	262	52.8
4	9.2	464	292	63.0	755	225	29.8	208	26.8
5	8.4	170	124	73.0	457	138	30.2	188	41.1
6	7.2	134	134	100.0	541	171	31.7	284	52.5
7	7.3	54	54	100.0	255	78	30.5	143	56.0
8	7.5	60	48	80.0	113	46	40.6	94	83.2
9	7.5	60	42	70.0	89	39	43.8	78	87.6
10	7.4	46	46	100.0	93	39	41.8	78	84.0
11	7,6	32	32	100.0	73	33	45.2	69	94.5
12	7.6	40	40	100.0	77	33	42,8	73	94.7
13	7.5	126	126	100.0	521	188	36.1	348	66.9
14	7.5	20	20	100.0	158	55	34.6	138	87.5
15	7.4	70	64	91.4	234	86	36.7	180	76.9
16	7.5	36	36	100.0	149	55	36.9	125	83.8
17	7.3	24	24	100.0	202	73	36.1	145	71.8
18	7.7	112	112	100.0	517	225	43.5	202	39.1
19	7.6	124	124	100.0	590	190	32.2	287	48.6
20	7.7	188	186	98.9	574	145	25.3	254	45.3
21	7.4	116	116	100.0	675	215	31.8	402	59.7
22	7.5	84	84	100.0	287	112	39.0	199	69.5
23	3/4_8.1	158	136	86.2	388	100	25.8	222	57.4
							34.9		

946190156

LAND USE	%	ACRES
R3	---	---
R2	21	4
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	79	15
COMMERCIAL	---	---
TOTAL	100	19



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
MARSHALL STREET OVERFLOW
TOWN OF KEARNY

Killam
Associates • Consulting Engineers

946190157

FIGURE K-005

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

JOHNSTON AVENUE, KEARNY
K-006

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers
48 ESSEX STREET MILLBURN NEW JERSEY 07041

JOHNSTON AVENUE OVERFLOW CHAMBER, KEARNY

The Johnston Avenue overflow serves a tributary area of approximately 207 acres. An estimated 80 percent of this area is served with a combined sewer system and the balance is served with separate sanitary and storm sewers.

The dry weather flow was estimated to be approximately 0.63 MGD during the dry weather months and 0.80 MGD during the wet weather months.

Metering and sampling equipment for this overflow chamber was in service beginning on December 31, 1974 and extending through June 16, 1975. During this period of metering and observation, 45 rainfalls occurred with observed or metered overflows on 33 occasions. In general, it was found that overflows would occur whenever the intensity of rainfall exceeded about 0.03 inches per hour. Based upon the observations, it is estimated that rainfall will occur at this station about 70 to 90 times per year, and that the number of overflows will range from 50 to 65 times. It was found that the overflow ranged as high as 13.5 MG. Peak flow rates as high as 112 MGD were measured.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

Samples were collected of the dry weather flow at this chamber and the samples were found to be fairly dilute. The suspended solids averaged about 72 mg/l and the BOD was 104 mg/l.

The storm water sampling also indicated a fairly dilute waste. The suspended solids was found to range from a low of 14 mg/l to a high of 114 mg/l and the BOD was found to range from a low of 30 mg/l to a high of 86 mg/l.

ELSON T. KILLAM ASSOCIATES, INC.

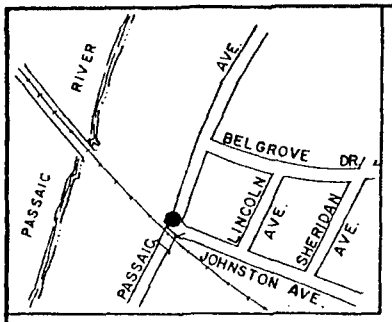
OVERFLOW DATA EXTRACT

JOHNSTON AVENUE OVERFLOW CHAMBER

KEARNY

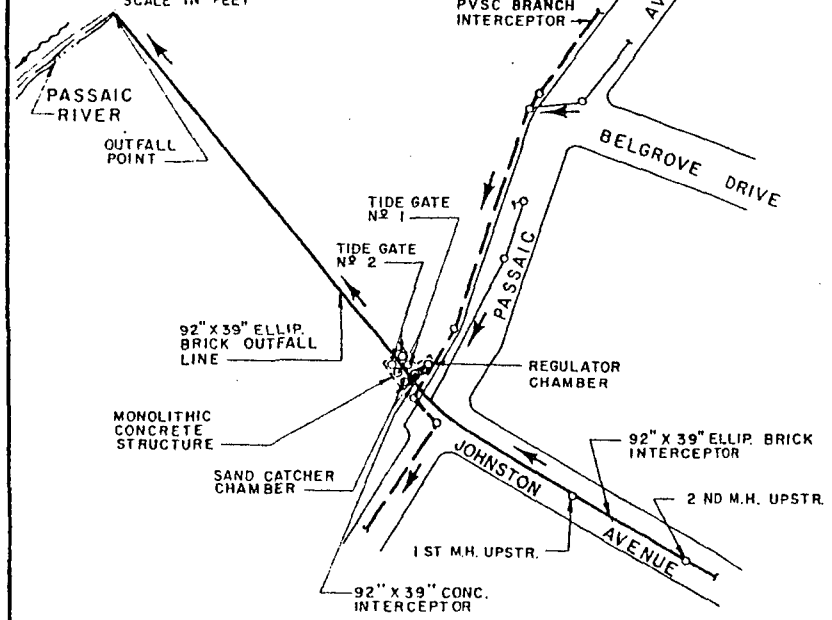
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	lightly industrialized and commercially developed area
Overflow Location (See Plate A):	on westerly side of intersection of Passaic Avenue and Johnston Avenue
District Outlet Sewer (See Plates A and B):	92" x 39" elliptical brick sewer
Outfall to River (See Plates A and B):	92" x 39" elliptical brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	minor tidal intrusions experienced
Surcharge Effects:	surcharge observed to within inches of chamber manhole rims due to capacity limitations
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

SCALE IN FEET



PLAN

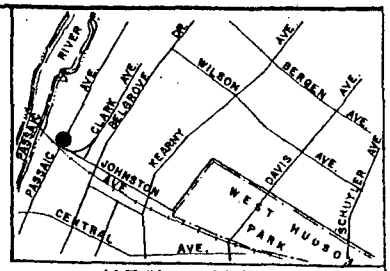
SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1284 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX

NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

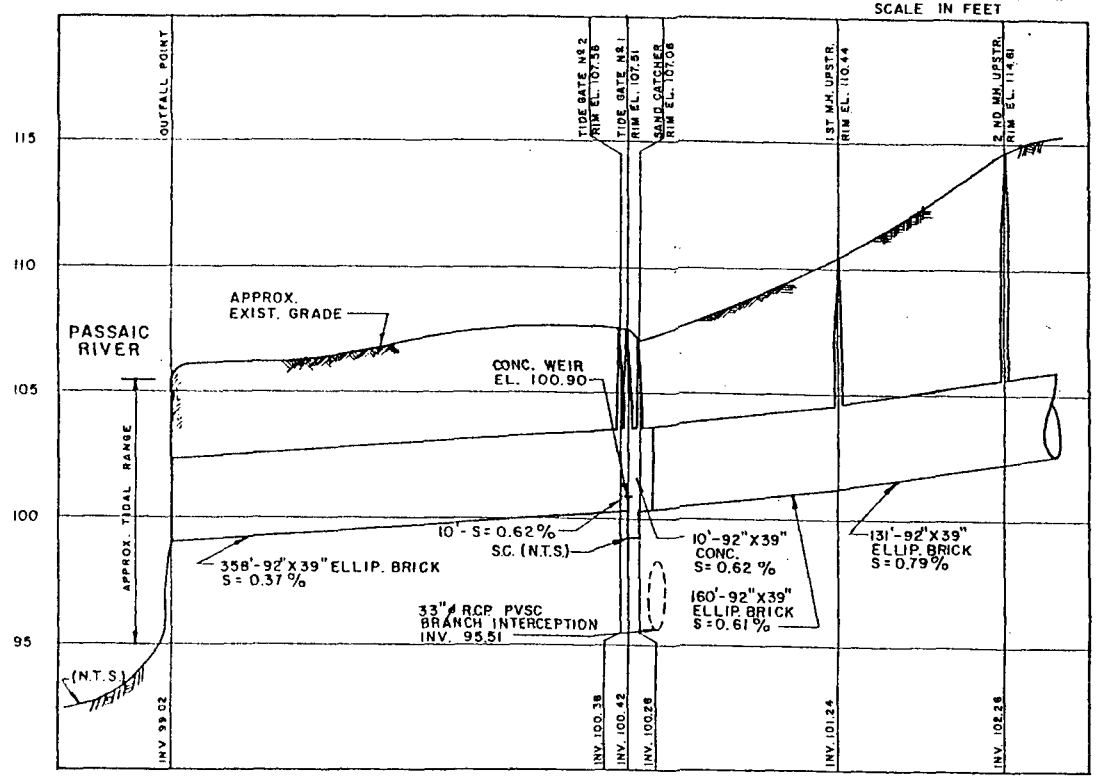
LEGEND:

→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATE
UP STR. = UP STREAM
DN. STR. = DOWN STREAM
N.T.S. = NOT TO SCALE
R.C.P. = REINFORCED CONCRETE PIPE
● = OVERFLOW LOCATION



KEY MAP

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-006

JOHNSTON AVENUE, KEARNY

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 40 EBBES STREET, MILLBURN, NEW JERSEY 07041

PLATE A

946190162

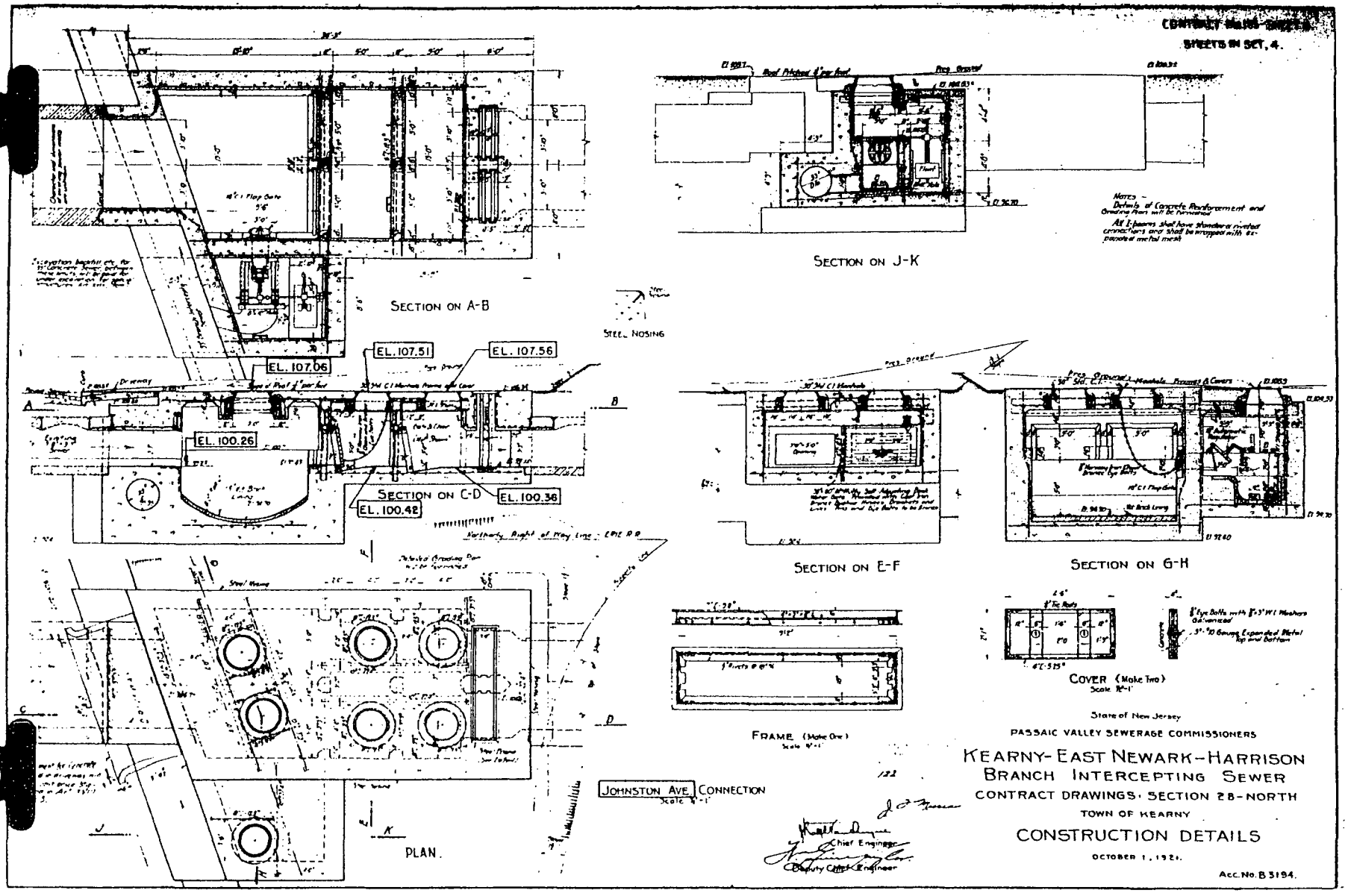
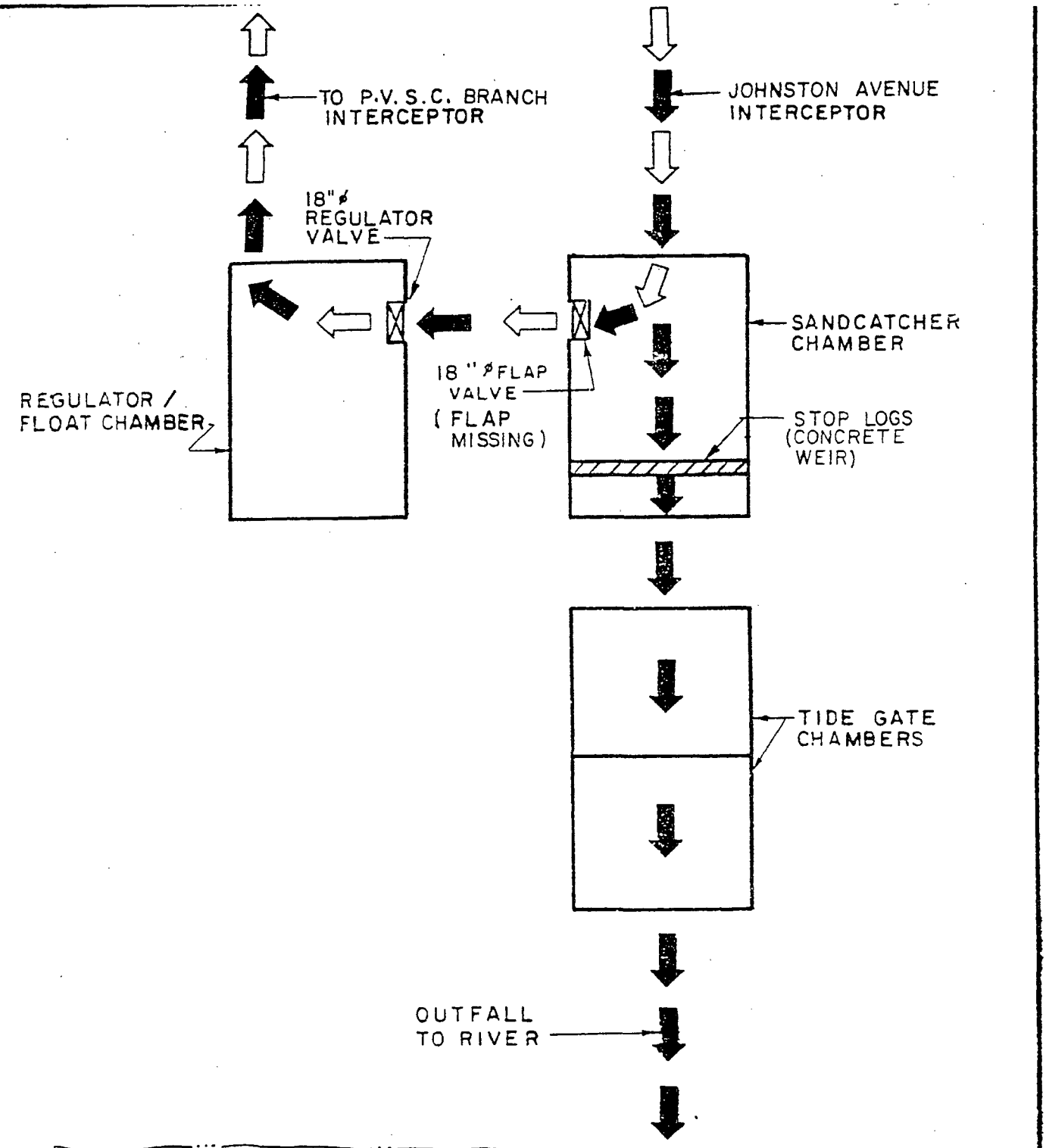


PLATE B

946190163



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

JOHNSTON AVENUE, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

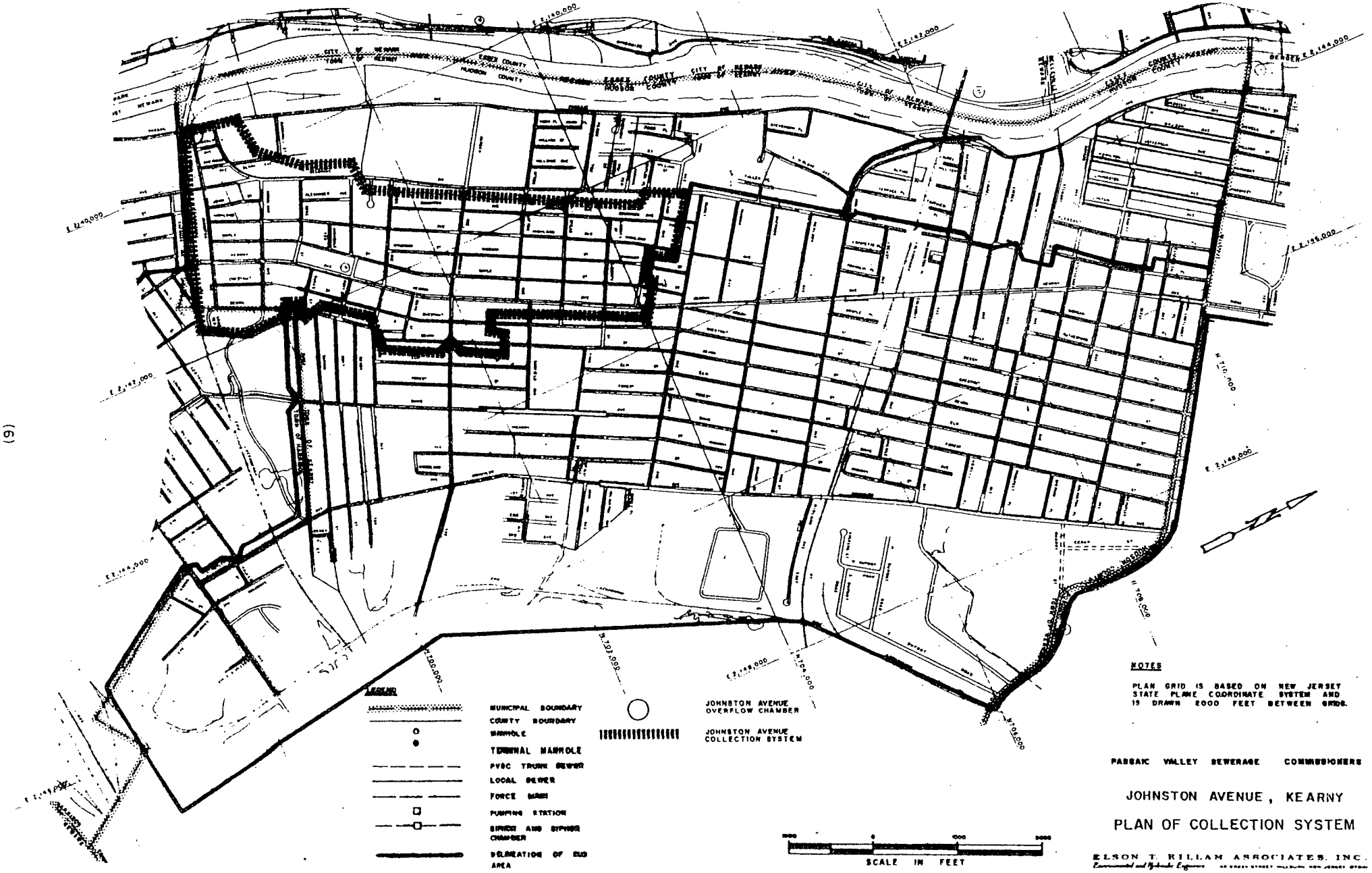
Environmental and Hydraulic Engineers

JOHNSTON AVENUE OVERFLOW CHAMBER K-006 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	no stop logs present (concrete weir)
Tide Gate Condition:	consists of four tide gate chambers, with two sets of two tide gates side by side. All tide gates observed as leaking.
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.323 square miles - 207 acres
Average Daily Flow	
Seasonal Dry Weather:	0.63 MGD (estimated)
Seasonal Wet Weather:	0.80 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	7.3 MGD
Approximate Length of Combined Sewers Serving District:	50,800 linear feet



PASSAIC VALLEY SEWERAGE COMMISSIONERS

JOHNSTON AVENUE, KEARNY

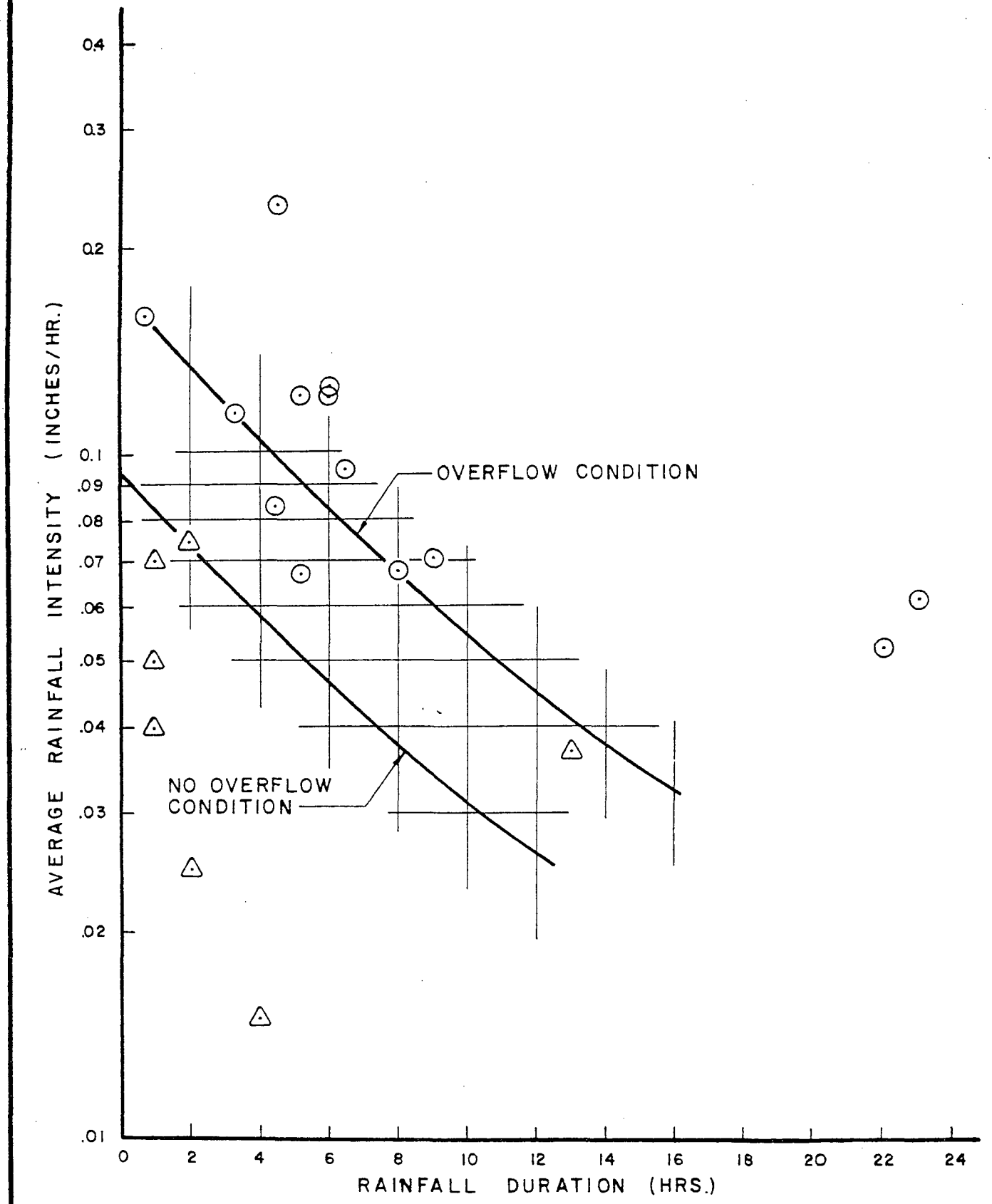
PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE D

946190166



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

JOHNSTON AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

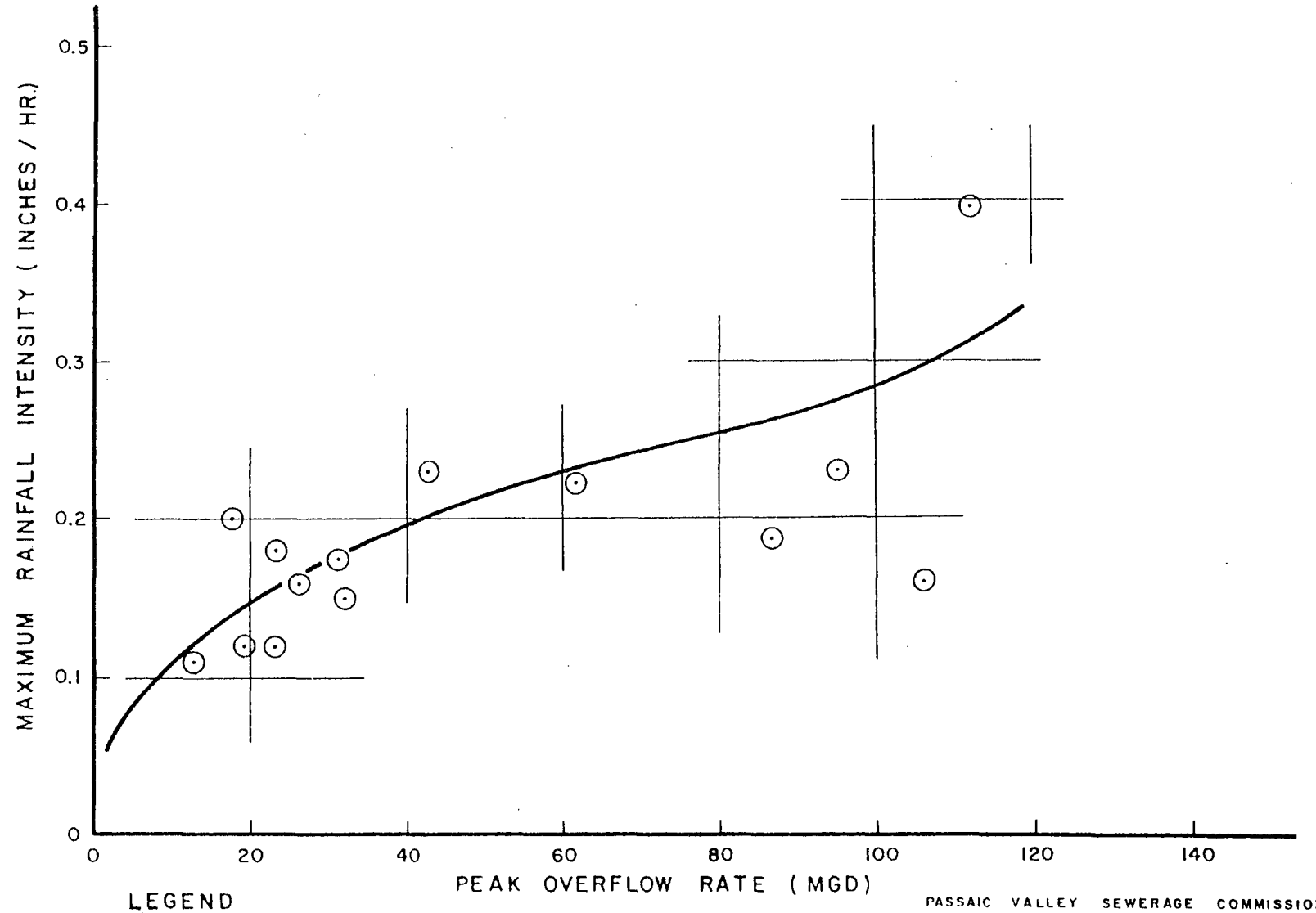
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190167

PLATE F



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

JOHNSTON AVENUE , KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

946190168

P.V.S.C. Reference # L-34

Date December 6, 1974

Elson Killam Associates-Infiltration Studies Set #15

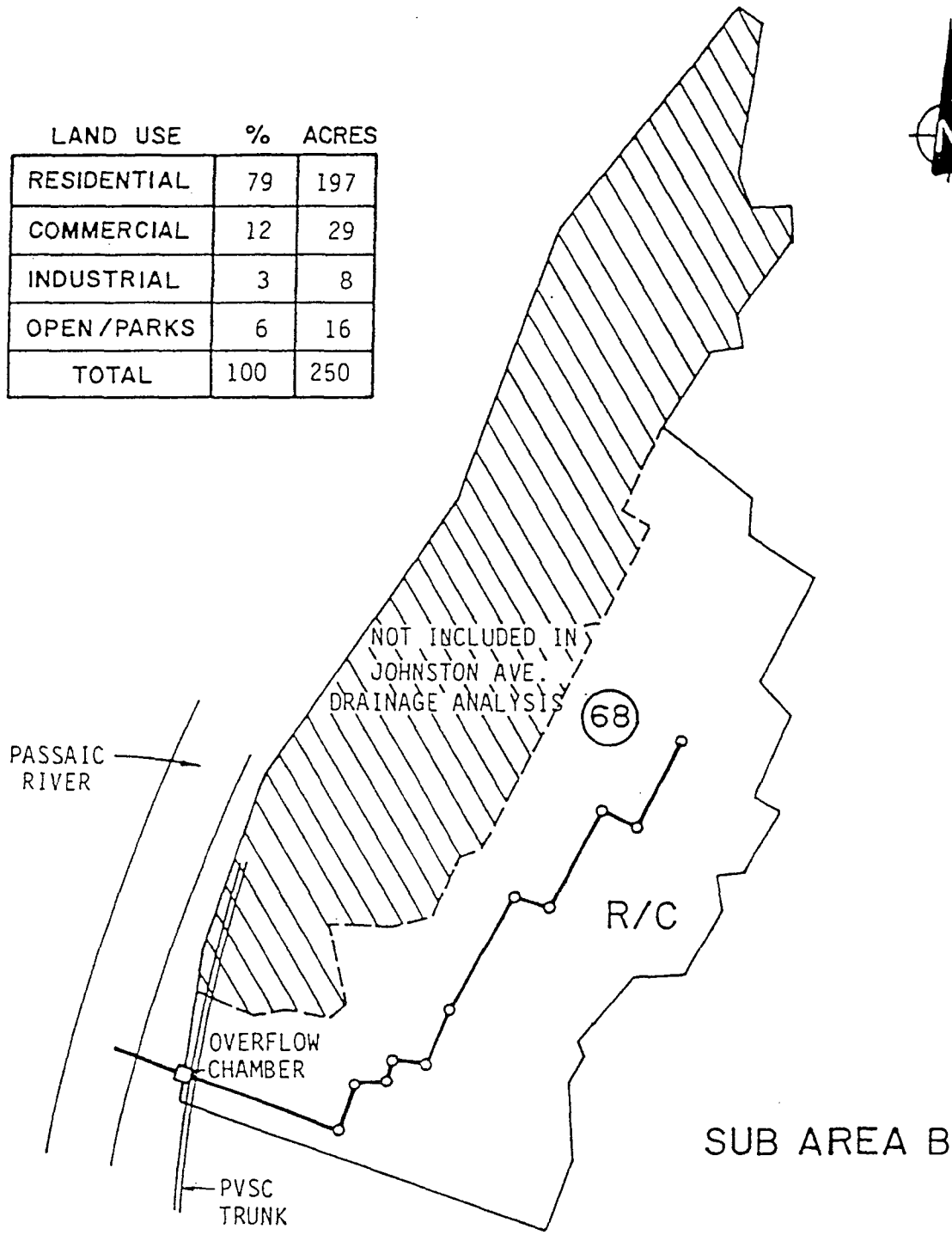
Johnston Avenue, Kearny

24 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	7.9	64	64	100.0	310	81	26.1	137	44.2
2	8.0	48	48	100.0	294	90	30.6	68	23.1
3	7.8	66	66	100.0	302	90	29,8	113	37.4
4	7.7	110	108	98.2	384	108	28.1	119	31.0
5	7.6	140	140	100.0	481	284	59.0	152	31.6
6	7.6	96	94	97.9	449	148	33.0	142	31.7
7	7.6	96	96	100.0	335	128	38.2	129	38.4
8	7.6	80	80	100.0	359	84	23.4	108	30.9
9	7.7	74	74	100.0	294	84	28.6	140	47.6
10	7.7	52	52	100.0	257	72	28.0	115	40.8
11	7.7	48	48	100.0	180	56	31.1	73	40.6
12	7.7	18	18	100.0	122	40	32.8	93	76.2
13	7.7	124	122	98.4	73	24	32.9	60	82.3
14	7.7	146	144	98.6	57	20	35.1	52	91.3
15	7.7	110	110	100.0	65	20	30.8	60	92.7
16	7.7	94	94	100.0	61	26	42.6	40	65.7
17	7.7	68	68	100.0	171	59	34.5	73	42.7
18	7.9	66	66	100.0	379	111	29.3	123	32.4
19	7.9	22	22	100.0	351	117	33.3	112	31.9
20	8.0	6	6	100.0	388	120	30.9	120	31.0
21	8.1	14	14	100.0	469	148	31.6	129	27.5
22	8.1	40	40	100.0	861	120	13.9	115	13.3
23	8.1	70	70	100.0	326	104	31.9	128	39.6
24	8.0	252	244	96.8	314	108	34.4	125	39.9
							32.1		

LAND USE	%	ACRES
RESIDENTIAL	79	197
COMMERCIAL	12	29
INDUSTRIAL	3	8
OPEN/PARKS	6	16
TOTAL	100	250



LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW FACILITY PLAN
LAND USE
JOHNSTON AVE. OVERFLOW
TOWN OF KEARNY

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
37 Brook Street Millburn New Jersey 07041

FIGURE K-006

946190170

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

IVY STREET, KEARNY
K-007

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

IVY STREET OVERFLOW CHAMBER, KEARNY

The Ivy Street overflow chamber serves a tributary area of approximately 607 acres which is the largest collection area among all of the Kearny-Harrison area overflows. Approximately 85 percent of this area is served with combined sewers and the balance is served with sepatate sanitary and storm sewers.

The dry weather flow was estimated to be approximately 3.0 MGD during dry weather months and 3.5 MGD during wet weather months. This is indicative of high infiltration from high ground water tables which is to be expected in a combined sewer system.

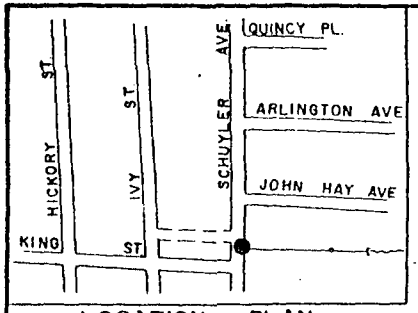
Under storm flow conditions, it was found that this overflow was active with essentially every rain. The overflow discharges into Frank's Creek and travels in this creek a distance of approximately one mile before entering the Passaic River.

Observations were started at this chamber on December 31, 1974 and extended through June 16, 1975. During the period of study, 45 rainfalls occurred. It has been estimated that overflows occurred on 32 occasions. It is also estimated that overflow will occur from 50 to 65 times per year at this chamber on the probability that rainfalls may occur 70 to 90 times per year. It was found that a rainfall intensity of only 0.02 inches per hour resulted in overflows, but with a rainfall duration of 16 or more hours.

The peak rate of overflow was found to be approximately 244 MGD. The overflow volume at this station was found to be as high as 23 MG.

Samples were taken of the sewage under dry weather flow conditions. An analysis indicated that the average BOD was approximately 258 mg/l but the total suspended solids was only 100 mg/l.

Samples taken during storm flow conditions indicated a range of results for BOD from a low of 51 mg/l to a high of 258 mg/l, while the suspended solids ranged from a low of 40 mg/l to a high of 297 mg/l. The foregoing would appear to reflect the effect of dilution, except that the effect of flushing action is also indicated by the higher suspended solids.



LOCATION PLAN

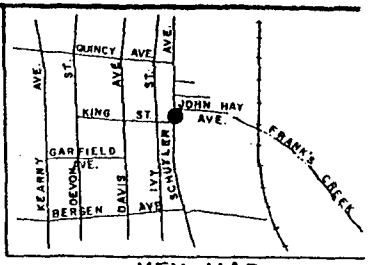
SCALE IN FEET

LEGEND

- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- ● = OVERFLOW LOCATION

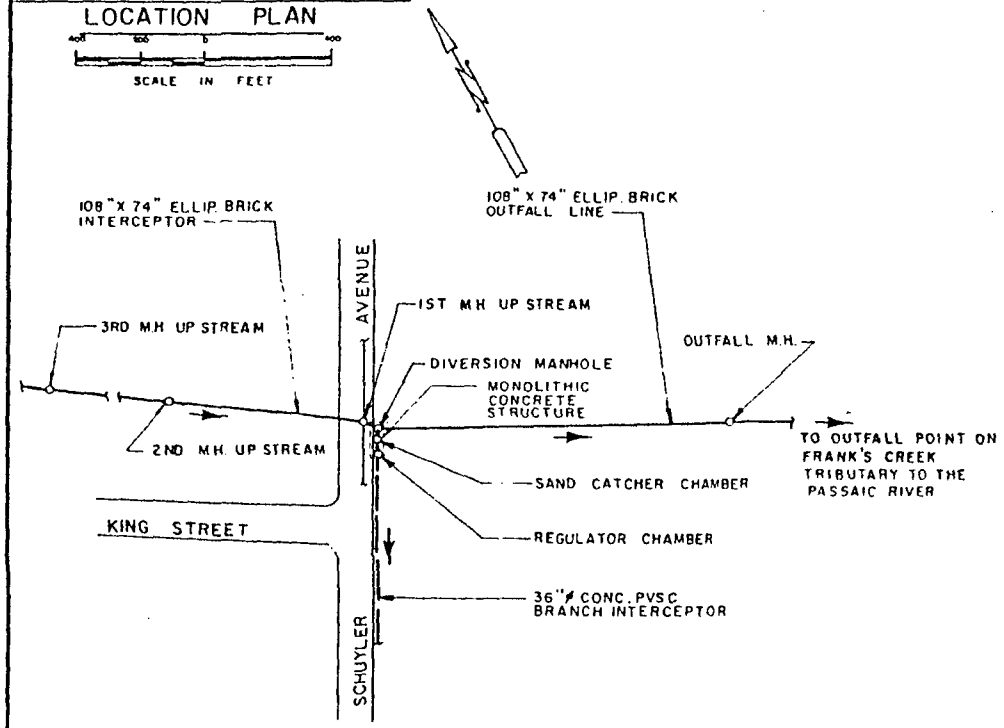
NOTES

1. ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.
2. TIDE GATE CHAMBERS ARE LOCATED ADJACENT TO OUTFALL AT FRANK'S CREEK.



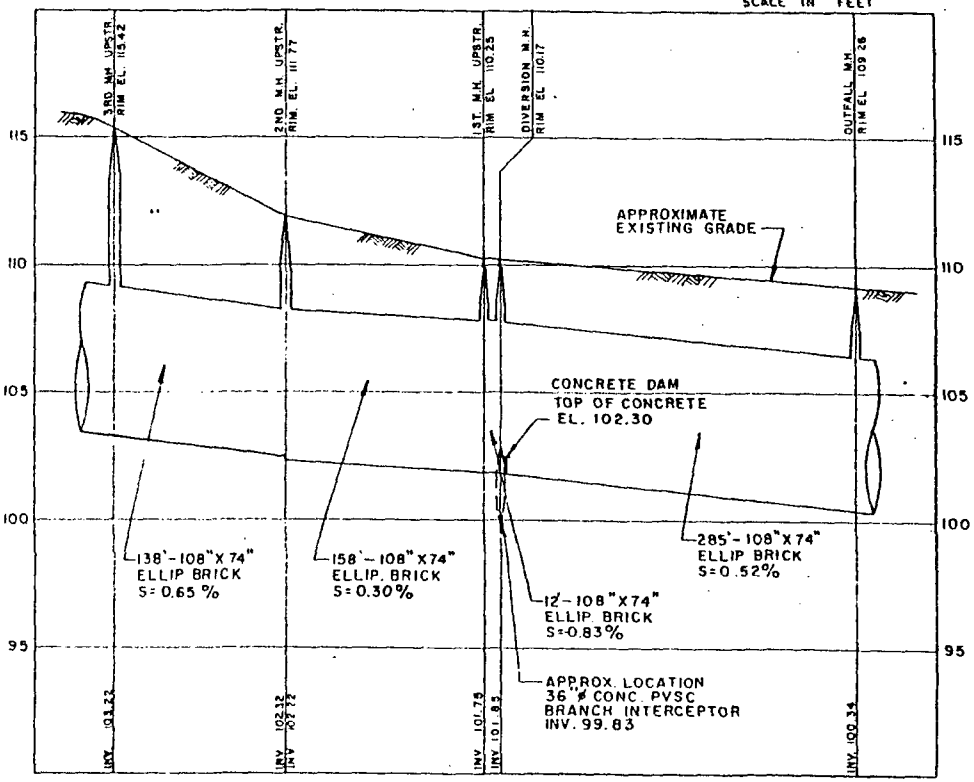
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. NO 1891 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONER

OVERFLOW CHAMBER K-007

IVY STREET, KEARNY

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

(2)

PLATE A

946190174

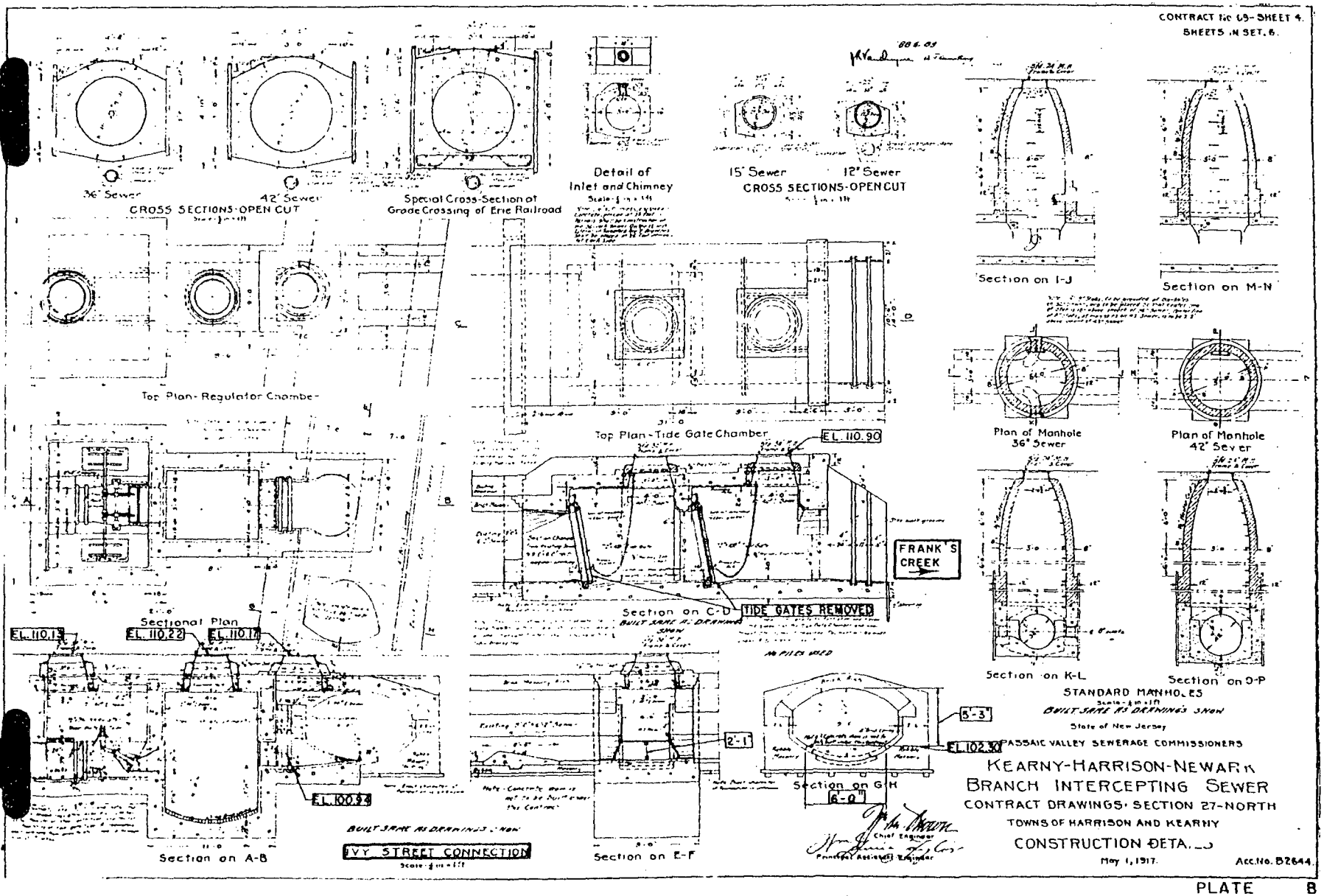
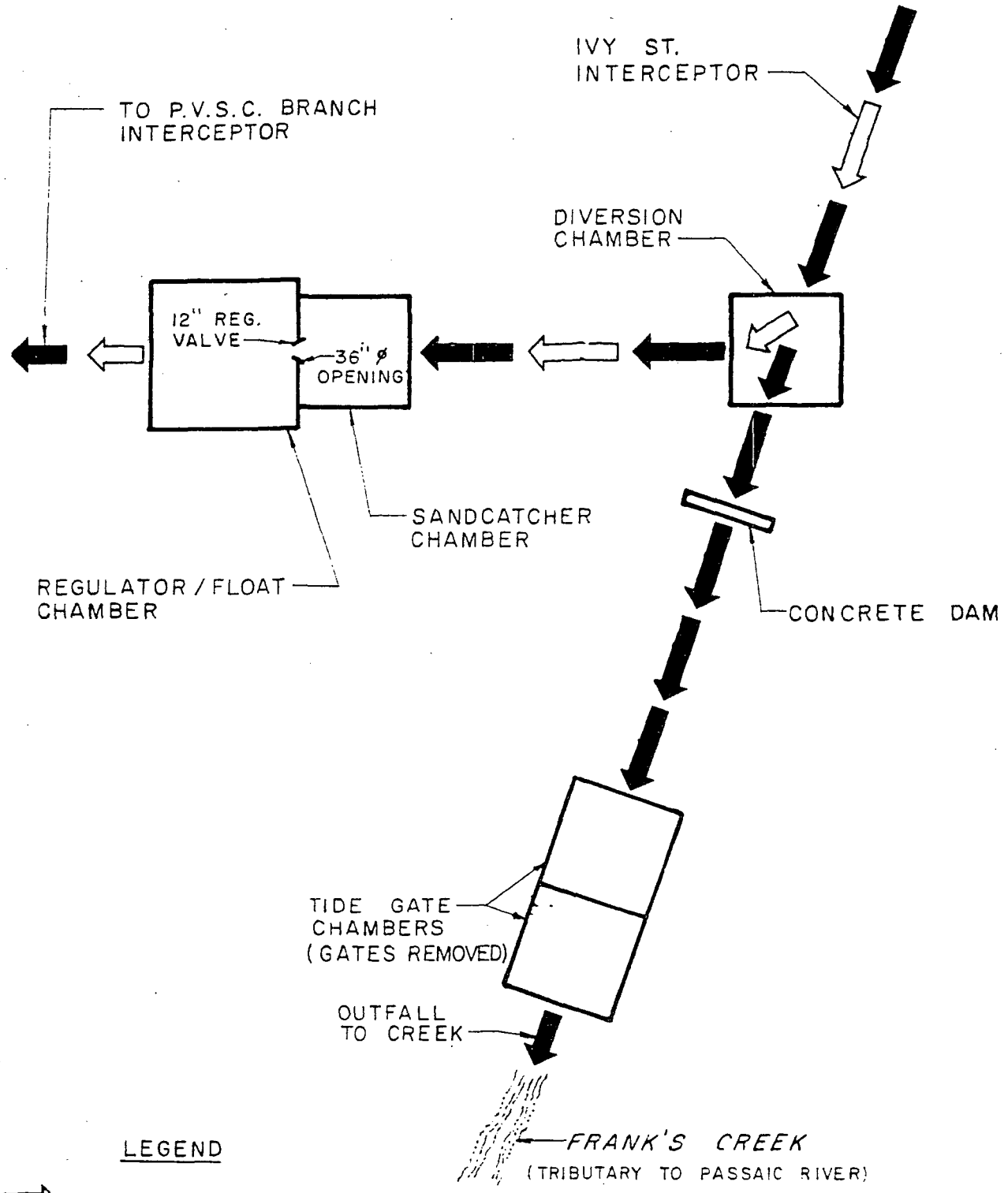


PLATE 8

946190175



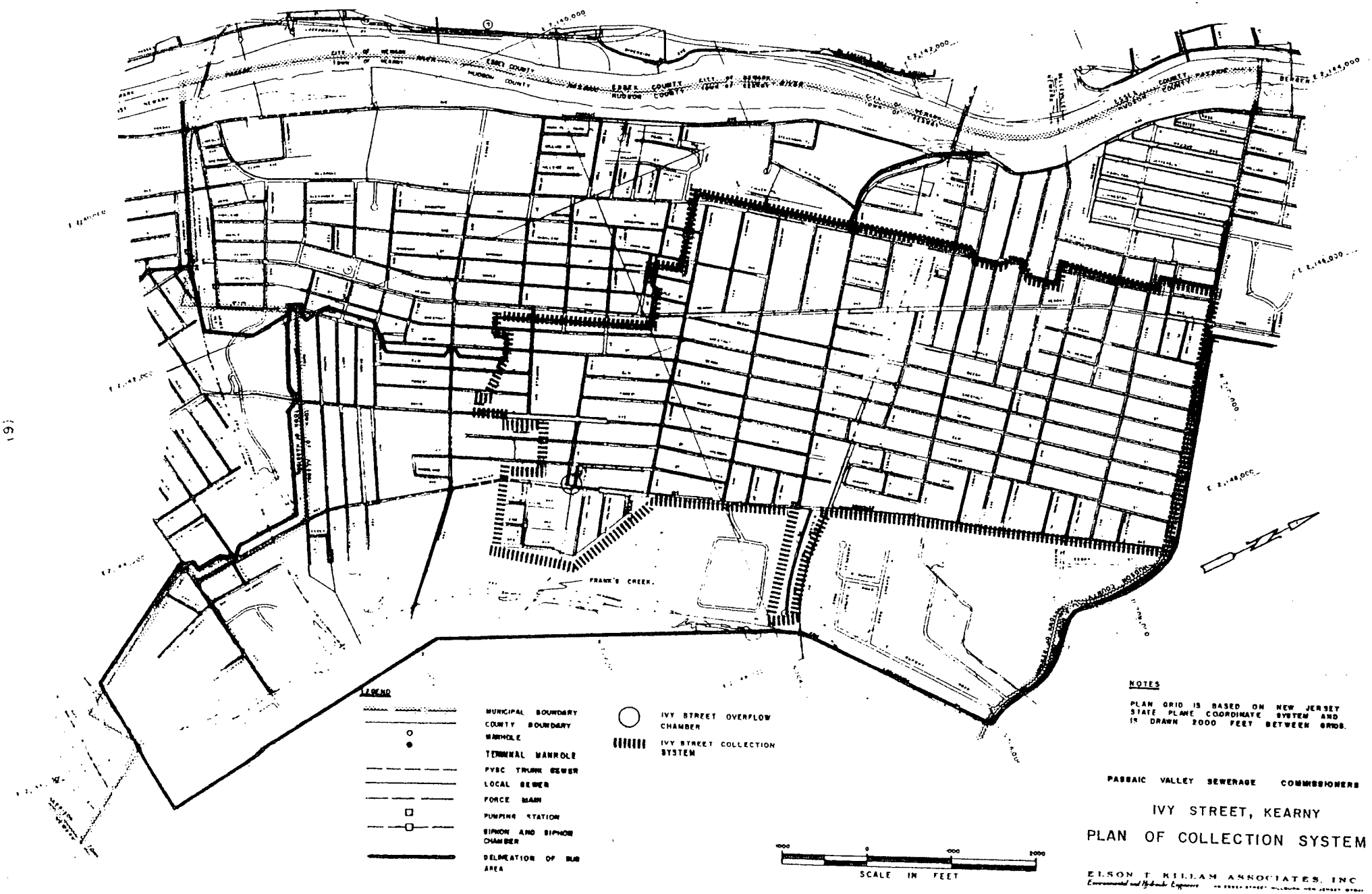
PASSAIC VALLEY SEWERAGE COMMISSIONERS

IVY STREET, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers



NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

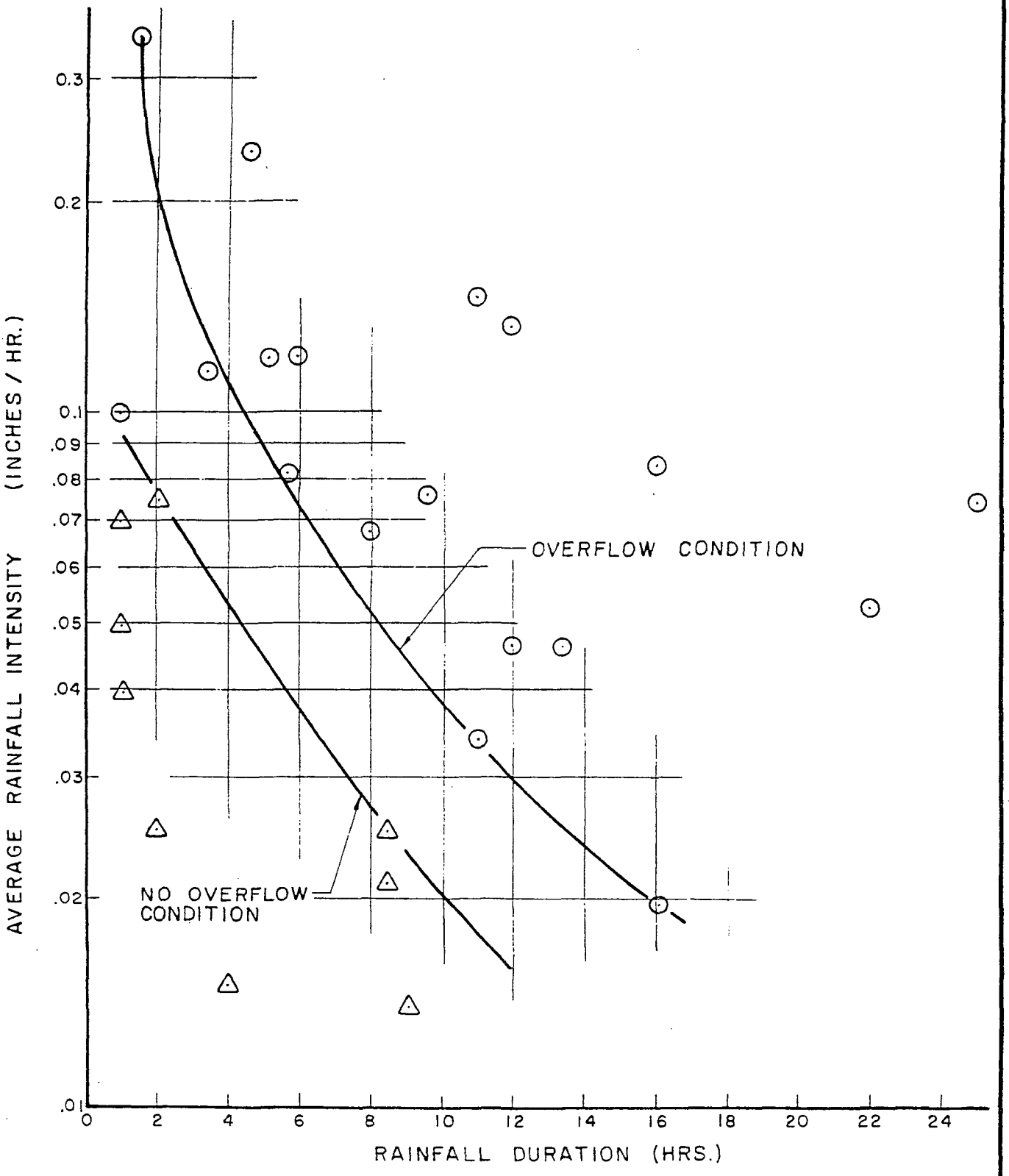
PASSAIC VALLEY SEWERAGE COMMISSIONERS

IVY STREET, KEARNY
PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D

946190177



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

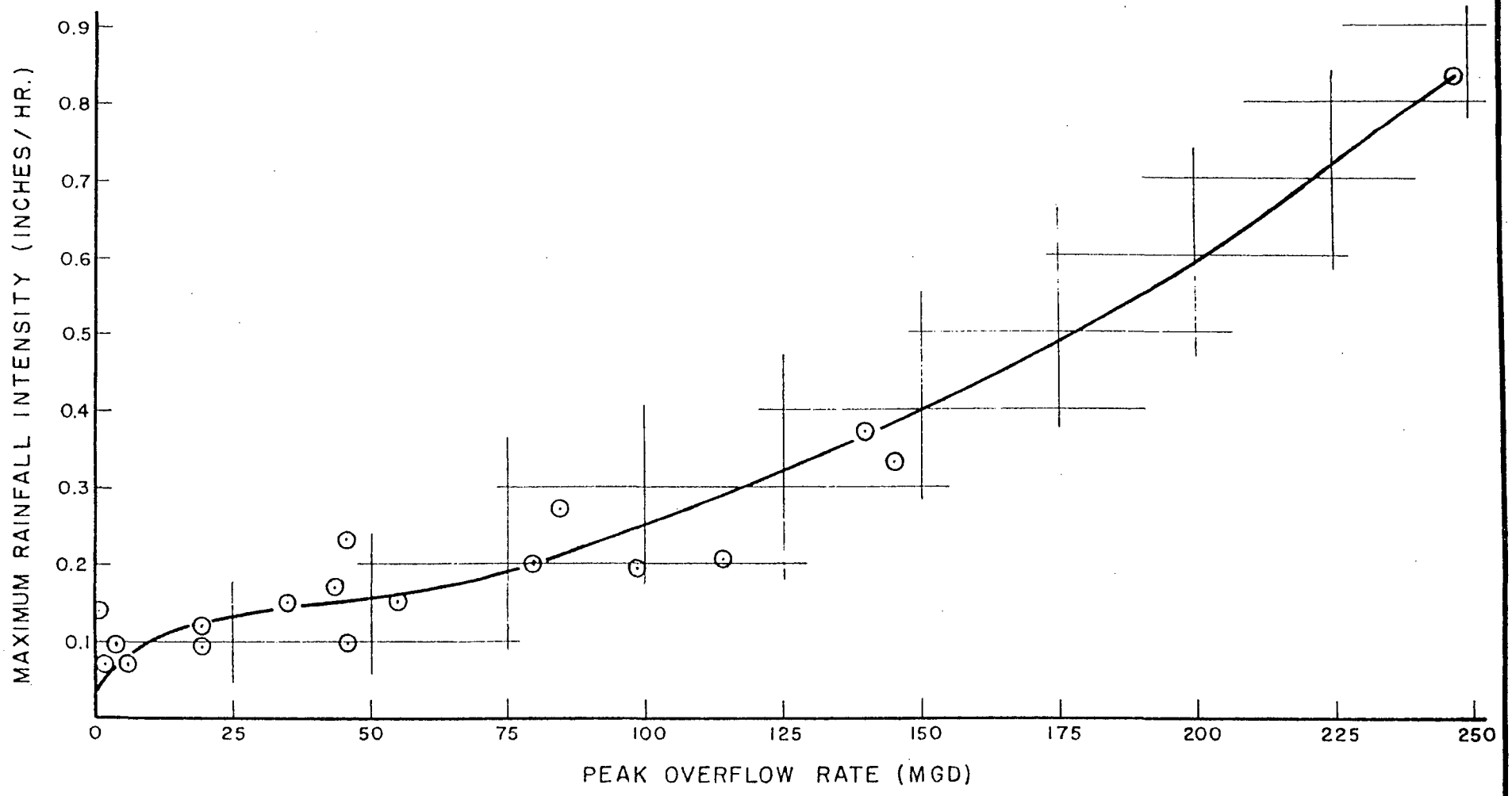
IVY STREET, KEARNY

AVERAGE RAINFALL INTENSITY
VS.
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

946190178

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

IVY STREET, KEARNY

MAXIMUM RAINFALL INTENSITY VS. PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 46 ESSEX STREET MILLBURN, NEW JERSEY 07041

PLATE F

946190179

P.V.S.C Reference # J-129

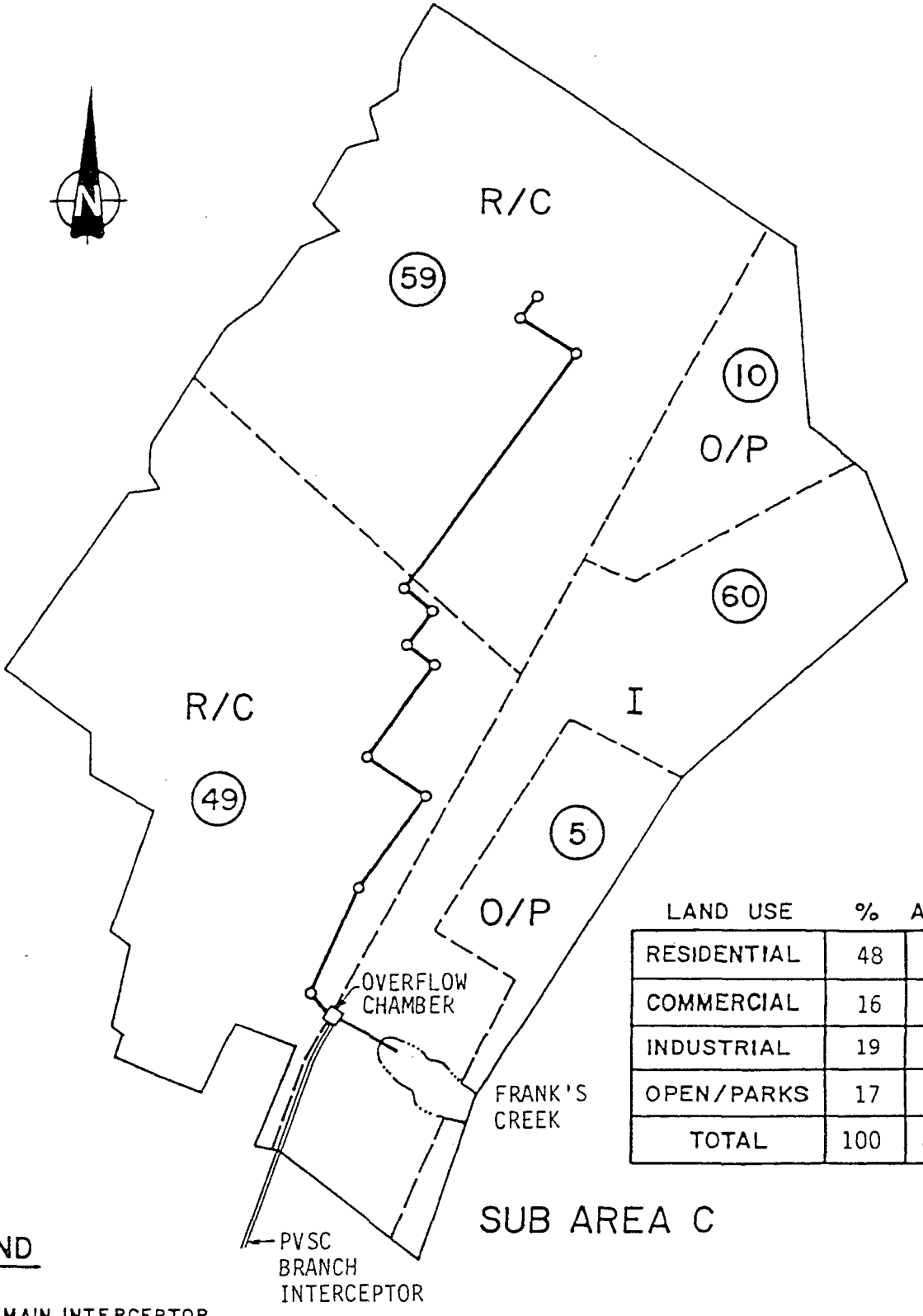
Date: 10/30/74

Elson Killam Associates-Infiltration Studies
Ivy Street Connection, Harrison-Upstream from Sandcathcher,
24 Samples 10:52 A. M , 10/29/74 to 10:03A. M., 10/30/74

BASELINE

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
Partial Fill 1	7.9	98	88	89.8	308	123	39.9	260	84.5
2	7.8	120	88	73.3	424	117	27.6	315	74.4
3	7.8	124	106	85.5	356	111	31.2	326	91.5
4	7.7	164	146	89,0	964	292	30.3	654	68.0
5	7.8	110	106	96.4	420	120	28.6	225	53.5
6	7.9	146	142	97.3	364	99	27.2	243	66.8
5PM 7	7.6	200	182	91.0	388	126	32.5	268	69.1
6PM 8	7.4	234	224	95.7	408	180	44.1	303	72.4
7PM 9	7.4	124	106	85.5	500	144	28.8	410	82.1
8PM 10	7.5	136	130	95.6	512	148	28.9	418	81.8
11	7.5	102	100	98.0	416	135	32.5	274	66.0
12	7.7	80	72	87.8	340	111	32.6	278	81.8
13	7.8	96	90	93.8	292	99	33.9	215	73.8
14	7.9	70	68	97.1	232	78	33.6	117	50.4
15	7.8	46	46	100.0	172	54	31.4	95	55.2
16	7.9	14	14	100.0	100	36	36.0	64	64.0
17	7.7	12	12	100.0	116	33	28.4	73	63.0
18	7.9	10	10	100.0	72	30	41.6	55	76.4
19	7.9	14	14	100.0	76	36	47.4	23	30.3
20	8.0	62	58	93.5	128	57	44.5	103	80.5
21	8.3	136	126	92.6	356	112	31.5	285	80.1
22	8.4	104	94	90.4	448	148	33.0	295	65.8
23	8.3	94	78	83.0	452	188	41.6	352	77.8
Partial Fill 24	9.5	112	98	87.5	664	224	33.7	548	82.5
					AVERAGE		34.2		70.5

946190180



LAND USE	%	ACRES
RESIDENTIAL	48	398
COMMERCIAL	16	131
INDUSTRIAL	19	163
OPEN/PARKS	17	139
TOTAL	100	831

SUB AREA C

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
IVY STREET OVERFLOW
TOWN OF KEARNY

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

946190181

FIGURE K-007

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

BERGEN AVENUE, KEARNY
K-008

1976

ELSON T KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

BERGEN AVENUE OVERFLOW CHAMBER, KEARNY

This overflow chamber serves a tributary area of 110 acres. Approximately 90 percent of this area is served with combined sewers with the balance of the area served by separate sanitary and storm sewers. This overflow is located at the easterly end of Bergen Avenue.

It has been estimated that the dry weather flow is approximately 0.62 MGD. The estimated flow during wet weather months is about 0.72 MGD. This overflow discharges into Frank's Creek.

During the period of study and observation, which extended from January 6, 1975 through July 21, 1975, rainfall occurred on 54 occasions. It has been estimated that overflow occurred at this chamber on 40 occasions during this period. It has been estimated that overflows will occur at this chamber from 50 to 70 times per year on the assumption that rainfalls will occur from 70 to 90 times per year. The peak overflow rates were found to be as high as 32 MGD, and the volume of overflow was found to be as high as 2.6 MG.

Samples taken of the dry weather flow indicated that the average suspended solids was about 68 mg/l and the BOD averaged approximately 139 mg/l. Under storm flow conditions, it was found that while the BOD ranged from a low of 47 mg/l to a high of 57 mg/l, the suspended solids ranged from a low of 260 mg/l to a high of 282 mg/l. This clearly reflects the effect of flushing under high flow and high velocity conditions in the combined sewer system.

ELSON T. KILLAM ASSOCIATES, INC.

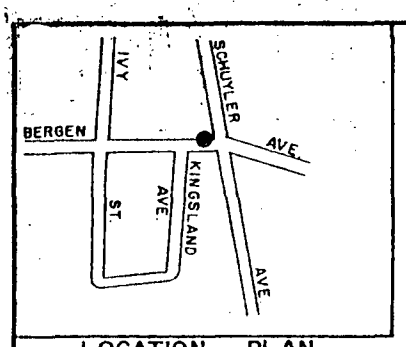
OVERFLOW DATA EXTRACT

BERGEN AVENUE OVERFLOW CHAMBER

KEARNY

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Frank's Creek, tributary to Passaic River
Character of District Served:	primarily residential, with some industrially developed area
Overflow Location (See Plate A):	to west of intersection of Bergen Avenue and Schuyler Avenue
District Outlet Sewer (See Plates A and B):	30" diameter brick sewer
Outfall to River (See Plates A and B):	31" x 48" elliptical brick sewer
Outfall Condition:	clear to fifth manhole downstream (see Plate A); actual outfall point obscured and not found
Tidal Effects:	none
Surcharge Effects:	surcharge observed at times due to capacity limitations
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

400 200 0 400

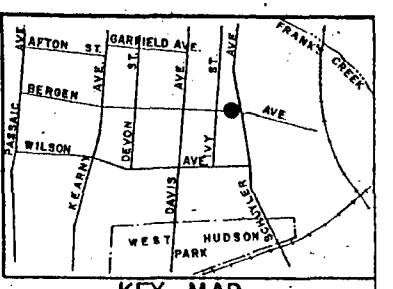
SCALE IN FEET

NOTE

ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND

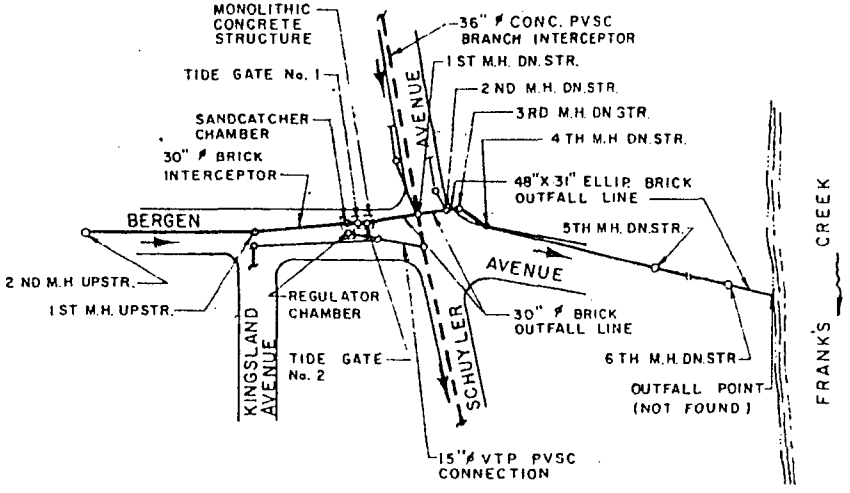
- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V. T. P. = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION



KEY MAP

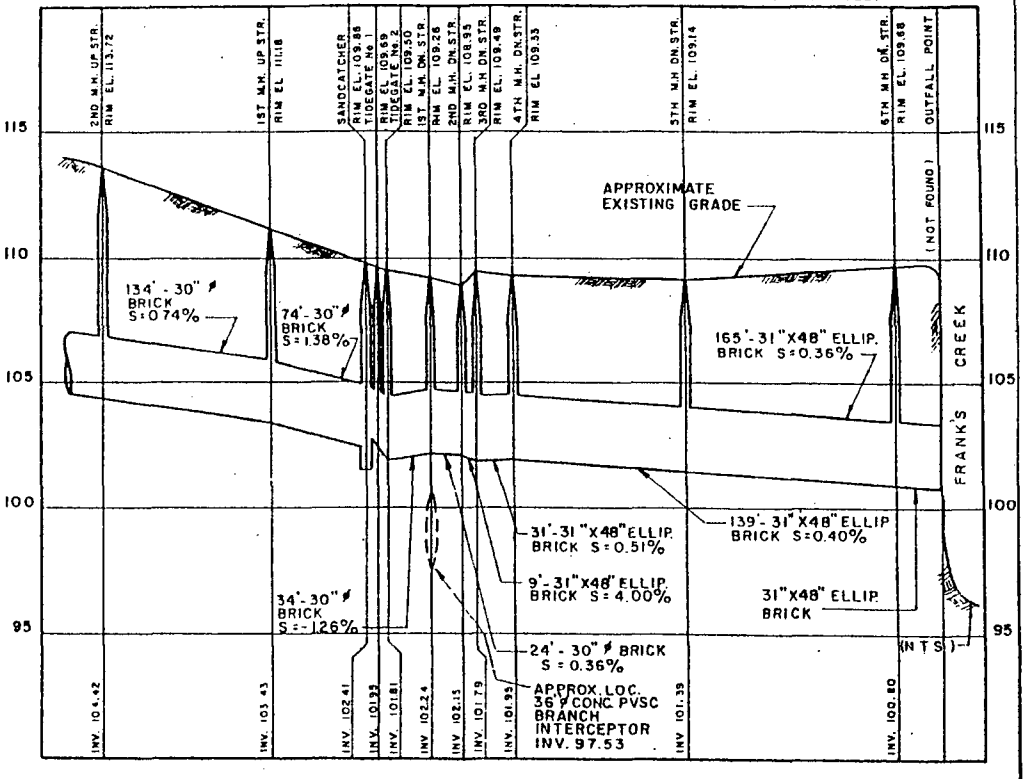
2000 1000 0 2000

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZONTAL 100 50 0 100

SCALE IN FEET

VERTICAL 5 4 3 2 1 0 5

SCALE IN FEET

'ALL' ELEVATIONS BASED ON B.M. NY 1291 AS ESTABLISHED BY N.J. GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-008

BERGEN AVENUE, KEARNY

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A

946190185

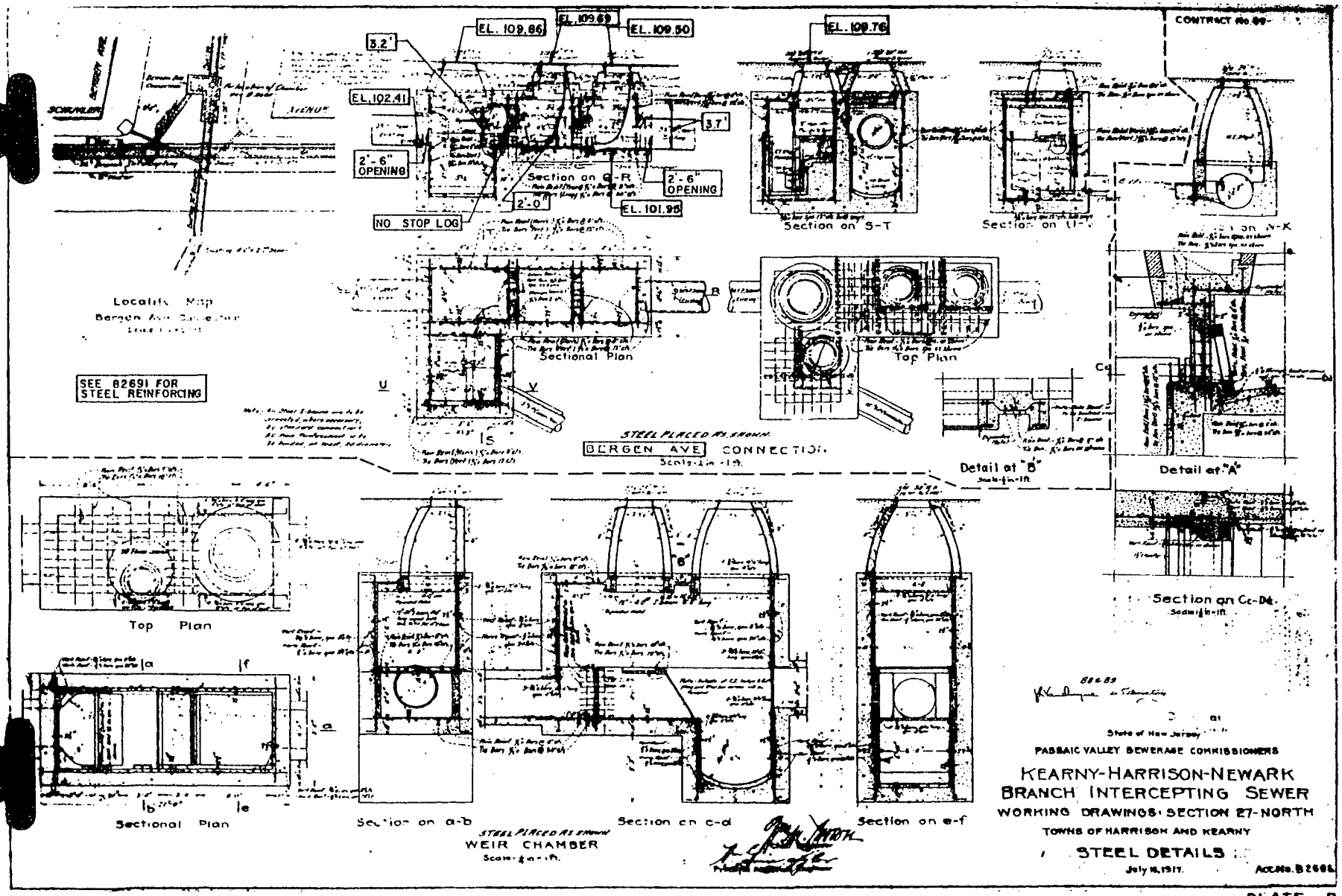
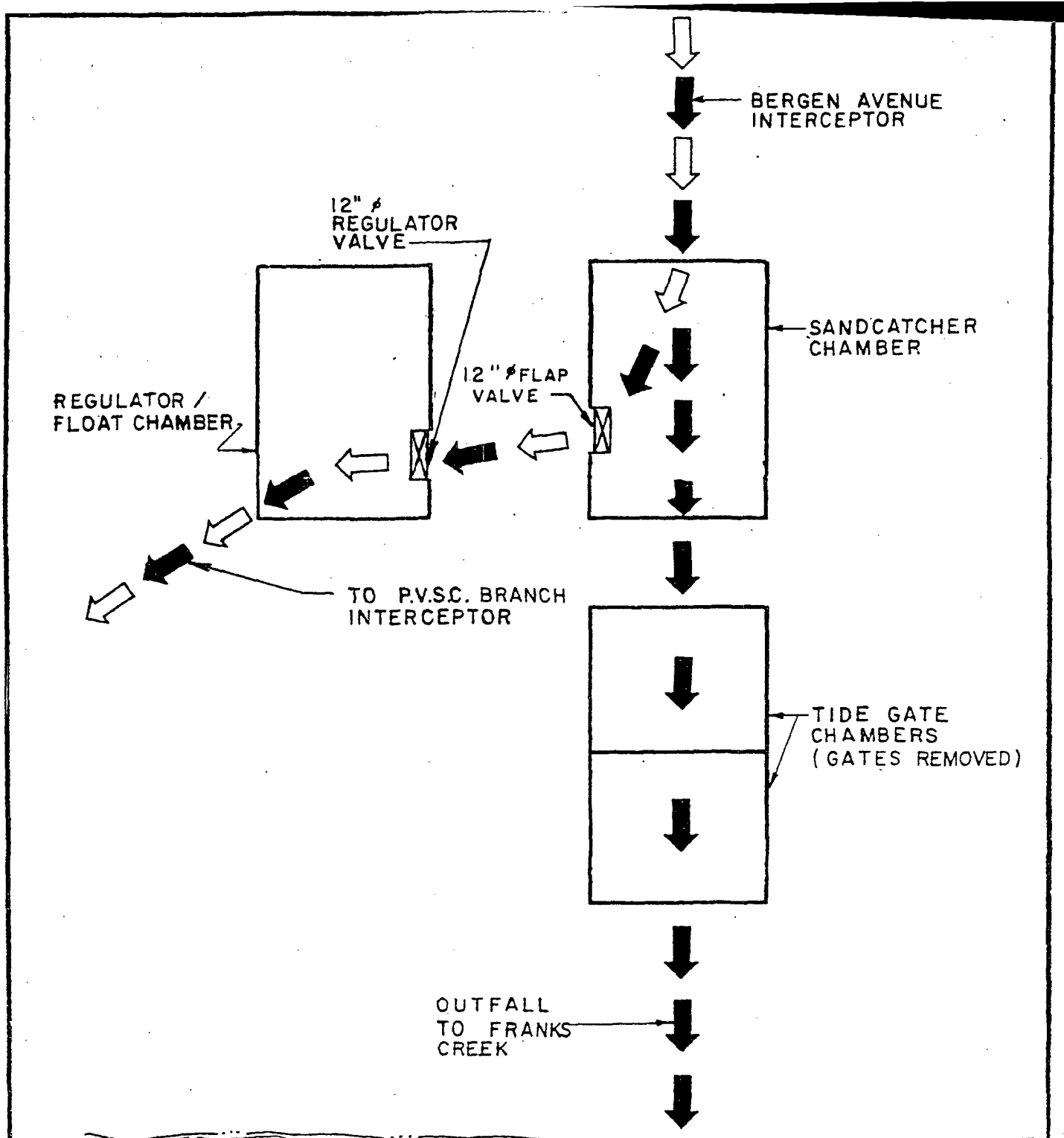


PLATE B

946190186



PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE , KEARNY

SCHEMATIC

(024/K-008)

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190187

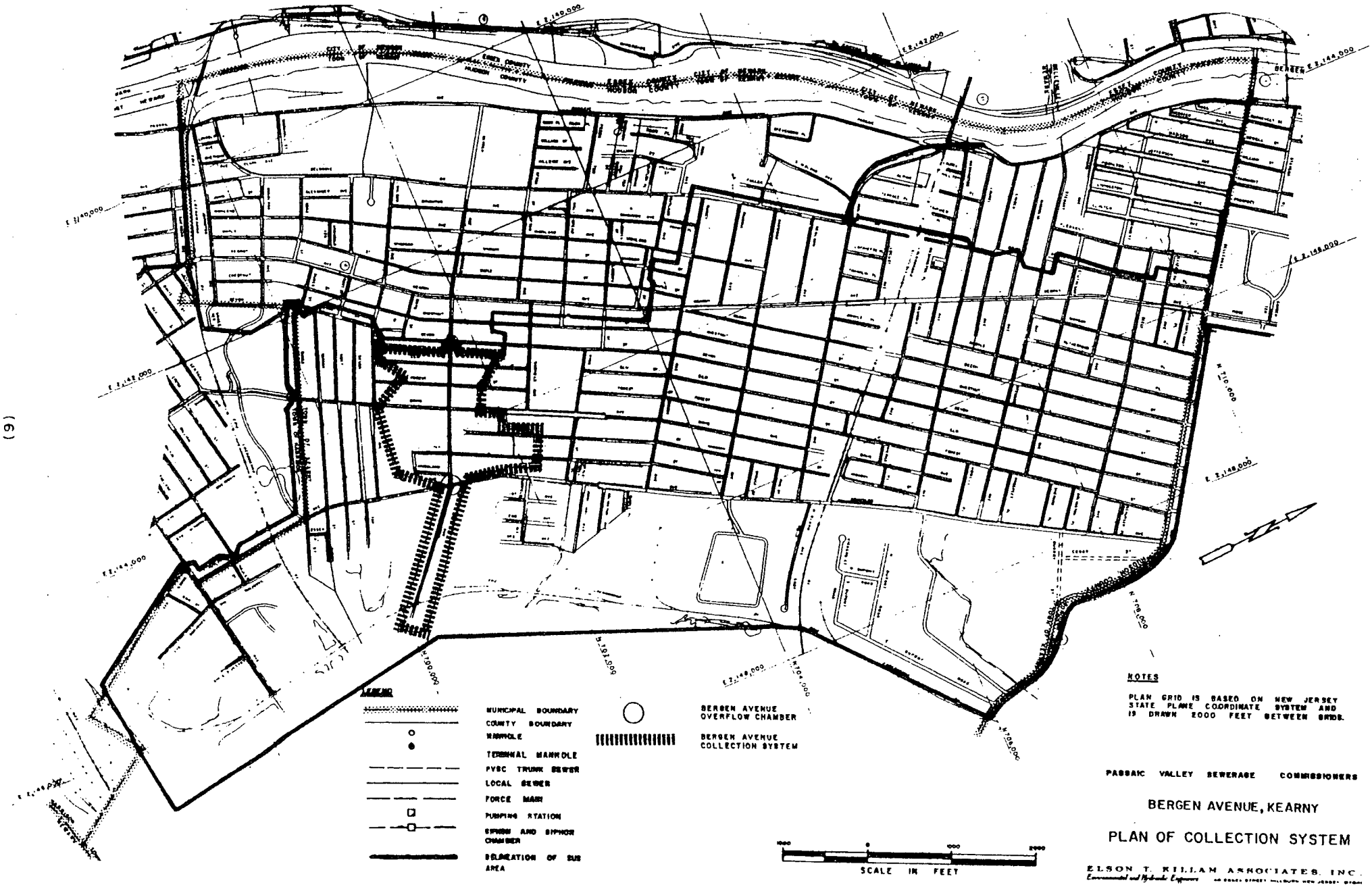
PLATE C

BERGEN AVENUE OVERFLOW K-008 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	none (no stop logs); for overflow, level must reach invert of line to tide gates
Tide Gate Condition:	both gates missing from chambers
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

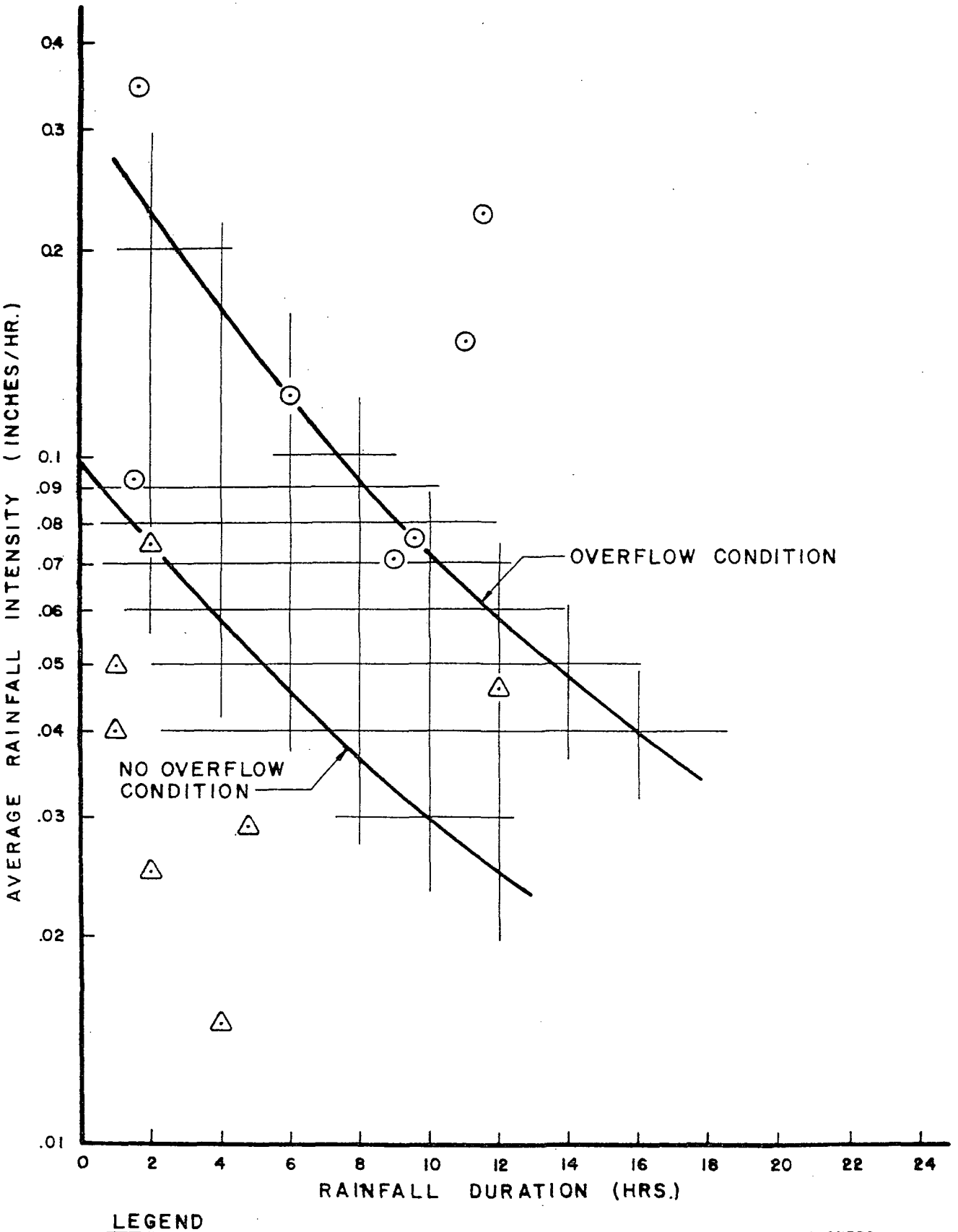
Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.172 square miles - 110 acres
Average Daily Flow	
Seasonal Dry Weather:	0.62 MGD (estimated)
Seasonal Wet Weather:	0.72 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	1.6 MGD
Approximate Length of Combined Sewers Serving District:	12,200 linear feet


LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SYPHON AND SYPHON CHAMBER
DELINEATION OF SUB AREA
BERGEN AVENUE OVERFLOW CHAMBER
BERGEN AVENUE COLLECTION SYSTEM
NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
SCALE IN FEET
PASSAIC VALLEY SEWERAGE COMMISSIONERS
BERGEN AVENUE, KEARNY
PLAN OF COLLECTION SYSTEM
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers
PLATE D

(9)

946190189



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

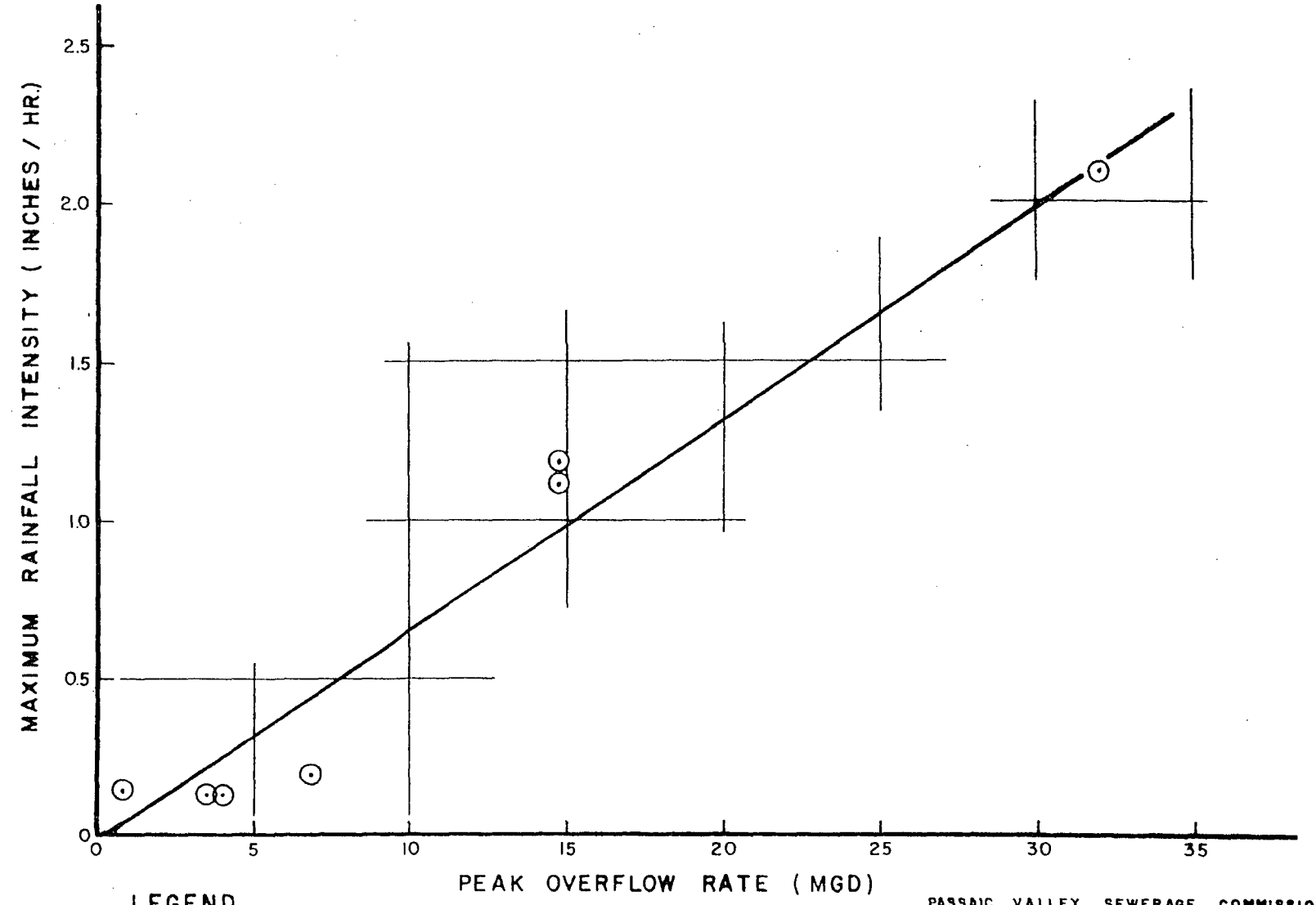
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 EAGLE STREET MILLBURN NEW JERSEY 07041

PLATE E

946190190



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BERGEN AVENUE, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 40 EBBEN STREET, MILLBURN, NEW JERSEY 07041

PLATE F

PVSC Reference # B-69 Date: 2/19/75

Elson T. Killam Associates - Infiltration Studies - Sampler #317 Set #45
Bergen Avenue, Kearny - In sandcatcher Chamber #024/K-008
1330-2/13/75 to 1200-2/14/75

Baseline

24 SAMPLES (PARTIAL)

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.5	174	70	40.2	388	93	23.9	138	35.6
2	7.5	140	60	42.8	271	81	29.9	79	29.1
3	7.5	246	140	56.9	343	87	25.3	93	27.1
4	7.7	214	118	60.8	408	90	22.1	87	21.3
5	7.7	194	86	44.3	323	84	26.0	87	26.9
6	7.7	254	130	51.2	465	150	32.3	155	33.3
7	7.8	264	150	56.8	553	110	19.9	131	23.7
8	7.9	188	152	80.9	367	132	36.0	131	35.7
9	8.1	188	140	74.5	376	128	34.1	138	36.7
10	8.0	242	162	67.0	412	136	33.0	141	34.2
11	7.9	140	96	68.5	392	108	27.6	87	22.2
12	8.1	118	78	66.1	307	81	26.4	83	27.0
13	8.2	162	108	66.8	287	108	37.5	86	29.9
14	8.1	72	56	77.8	303	60	19.8	67	22.1
15	7.8	32	32	100.0	202	50	24.7	54	26.7
16	7.9	0	-	-	105	32	30.5	27	25.7
17	8.1	0	-	-	97	30	30.9	33	34.0
18	7.9	0	-	-	85	28	32.9	28	32.9
19	7.8	0	-	-	93	26	27.9	35	37.7
20	7.8	0	-	-	109	28	25.7	29	26.6
21	7.9	0	-	-	113	28	24.8	44	38.9
22	8.2	0	-	-	149	30	20.1	43	28.9
23	8.5	64	64	100.0	250	64	25.6	132	52.8
24	8.8	138	124	89.8	420	105	25.0	135	32.2
						Average	27.6		30.9

PVSC Reference # D-182

Date: 4/17/75

Elson T. Killam Associates - Infiltration Studies
Bergen Avenue, Kearny - 1st M.H. Down from meter
11:00 - 4/4/75 to 2400 - 4/14/75

Sampler # 324 Set #43
Chamber #024/K-008

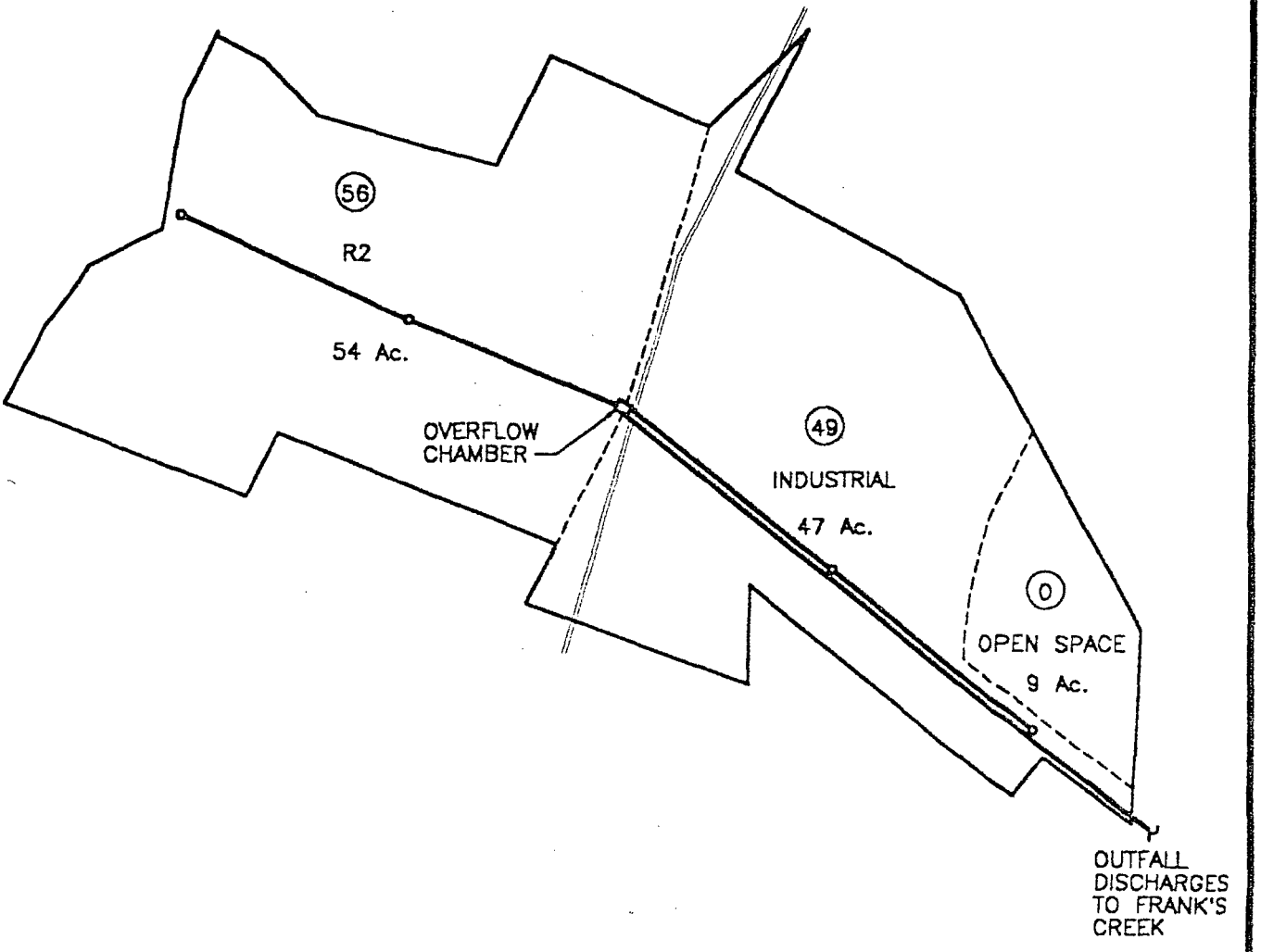
BASELINE

13 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD	Lithium
1	7.6	22	22	100.0	60	20	33.3	23	38.4	
2	8.0	0	-	-	28	13	46.4	10	35.7	
3	7.9	0	-	-	32	16	50.0	9	28.1	
4	8.1	26	26	100.0	44	17	25.9	15	34.1	
5	8.1	6	6	100.0	28	12	42.9	17	60.7	
6	8.3	0	-	-	24	9	37.5	16	66.7	
7	8.2	0	-	-	20	8	40.0	14	70.0	
8	8.1	0	-	-	16	9	56.2	13	81.2	
9	8.1	14	14	100.0	20	10	50.0	16	80.0	
10	8.1	0	-	-	24	8	33.3	13	54.2	
11	8.0	0	-	-	20	7	35.0	12	60.0	
12	8.1	0	-	-	16	11	68.8	14	87.5	
13	8.1	0	-	-	28	11	39.3	9	32.1	
						Average	43.0		56.1	

946190193

LAND USE	%	ACRES
R3	---	---
R2	49	54
R1	---	---
OPEN SPACE	8	9
INDUSTRIAL	43	47
COMMERCIAL	---	---
TOTAL	100	110



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
BERGEN AVENUE OVERFLOW
TOWN OF KEARNY

Killam
Associates Consulting Engineers

946190194

FIGURE K-008

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

TAPPAN STREET, KEARNY
K-009

1976

ELSON T KILLAM ASSOCIATES, INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

TAPPAN STREET OVERFLOW CHAMBER, KEARNY

The Tappan Street overflow chamber serves a tributary area of only 35 acres. The area is served with combined sewers. This overflow joins the overflow from Dukes Street, merging into a common outfall line which discharges into an open ditch leading to Frank's Creek.

The average daily flow was estimated to be 0.35 MGD in the dry weather months and 0.41 MGD in the wet weather months.

Metering facilities and sampling equipment for this chamber were in service beginning February 23, 1975, and extending through August 24, 1975. During this period of time, rainfalls were recorded on 45 occasions, and overflows are estimated to have occurred on 28 occasions.

It has also been estimated that overflows at this chamber will occur from 45 to 55 times per year when the rainfall occurrences range from 70 to 90 times yearly.

It was found that an average rainfall intensity of only about 0.03 inches per hour caused overflow. The maximum peak rate of overflow was found to be 8.7 MGD, but the volume of overflow was found to be only 0.2 MG under the worst storm recorded during the period.

Sampling of the average daily flow under dry weather conditions indicated a suspended solids concentration of about 137 mg/l and a BOD value of about 194 mg/l, which reflects basically, a domestic sewage waste.

Sampling of the storm water overflow indicated a suspended solids concentration of only about 88 mg/l and a BOD value of about 67 mg/l, reflecting the extent of dilution due to storm flows.

ELSON T. KILLAM ASSOCIATES, INC.

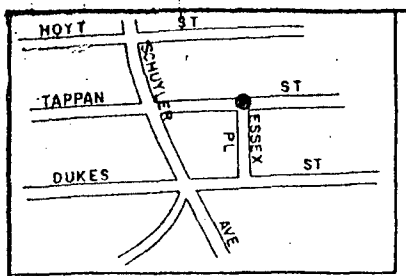
OVERFLOW DATA EXTRACT

TAPPAN STREET OVERFLOW CHAMBER

KEARNY

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Franks Creek, tributary to Passaic River
Character of District Served:	primarily residential, but with some industrial flow
Overflow Location (See Plate A):	at intersection of Tappan St. and Essex Place
District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	obstructed initially, but then cleared (common outfall with Dukes Street)
Tidal Effects:	none
Surcharge Effects:	surcharge observed at times due to capacity limitations
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

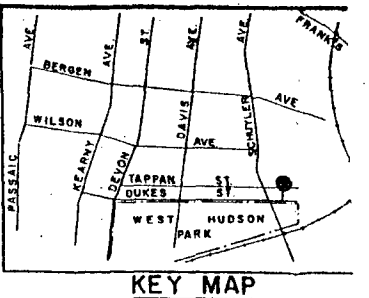
SCALE IN FEET

NOTES

1. ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.
2. THE TAPPAN AND DUKES STREET OUTFALLS JOIN INTO A COMMON OUTFALL PIPE WHICH EMPTIES INTO AN OPEN DITCH IN THE MEADOWLANDS ALONG THE ERIE – LACKAWANNA RAILROAD.

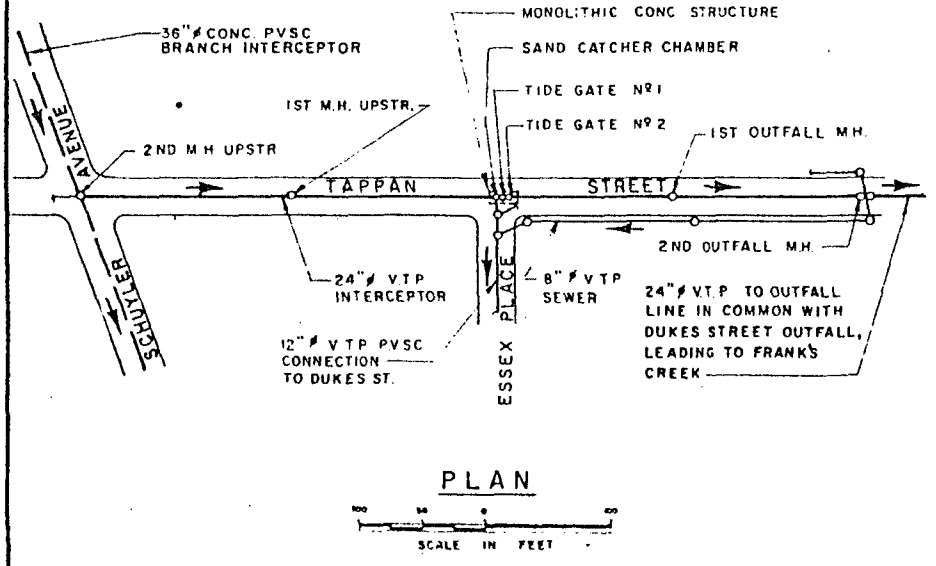
LEGEND

→ DIRECTION OF FLOW
S.C. = SAND CATCHER
V.T.P. = VITRIFIED TILE PIPE
UP STR. = UPSTREAM
DN. STR. = DOWNSTREAM
N.T.S. = NOT TO SCALE
● = OVERFLOW LOCATION



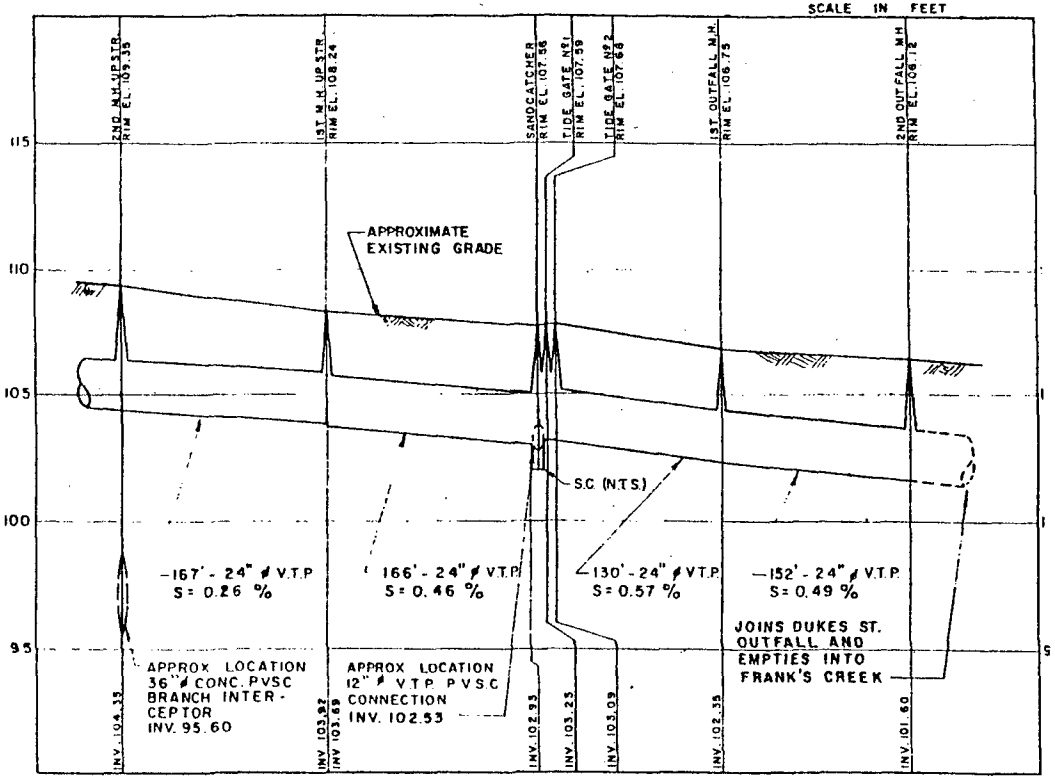
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 1281 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-009

TAPPAN STREET, KEARNY

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE

946190198

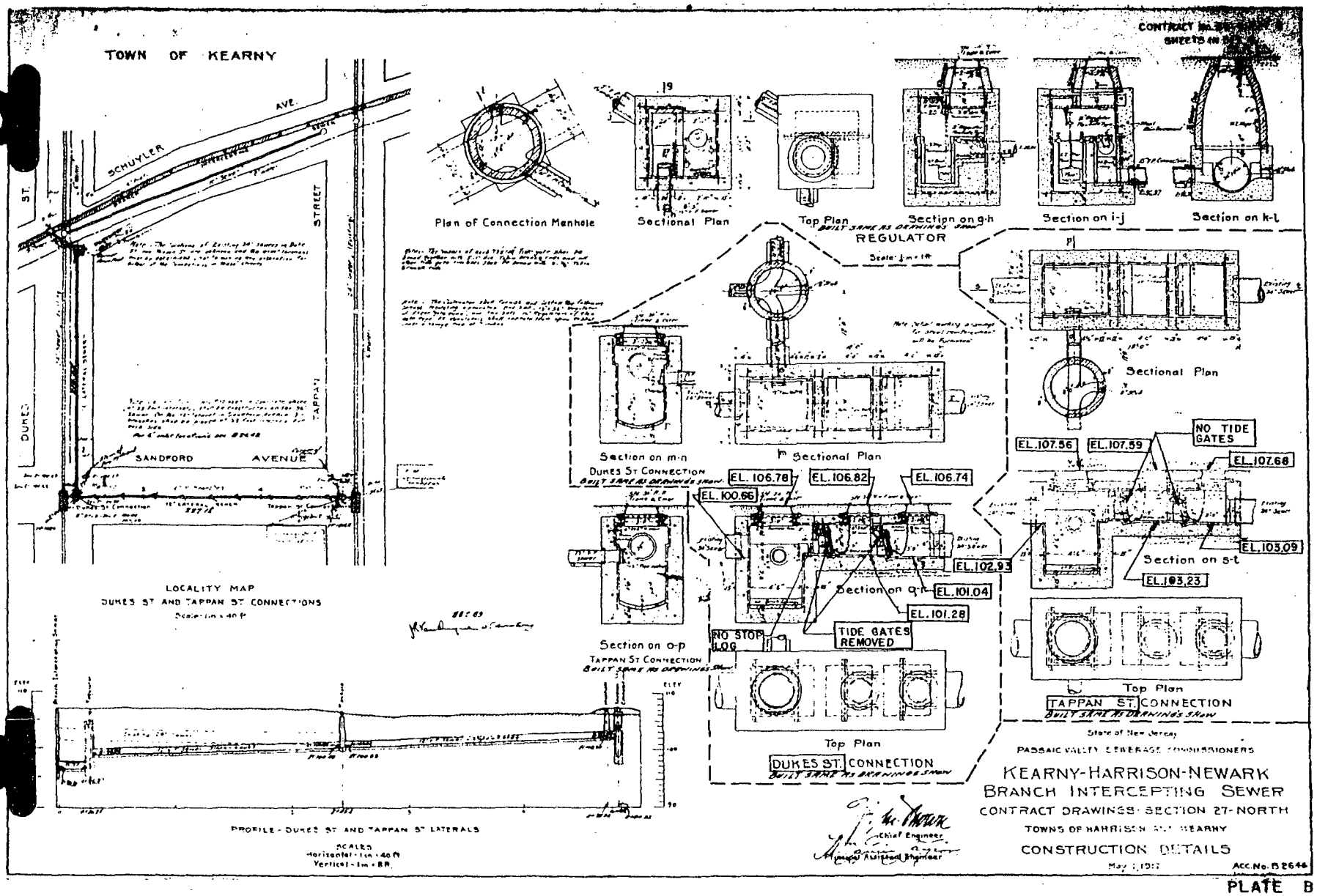
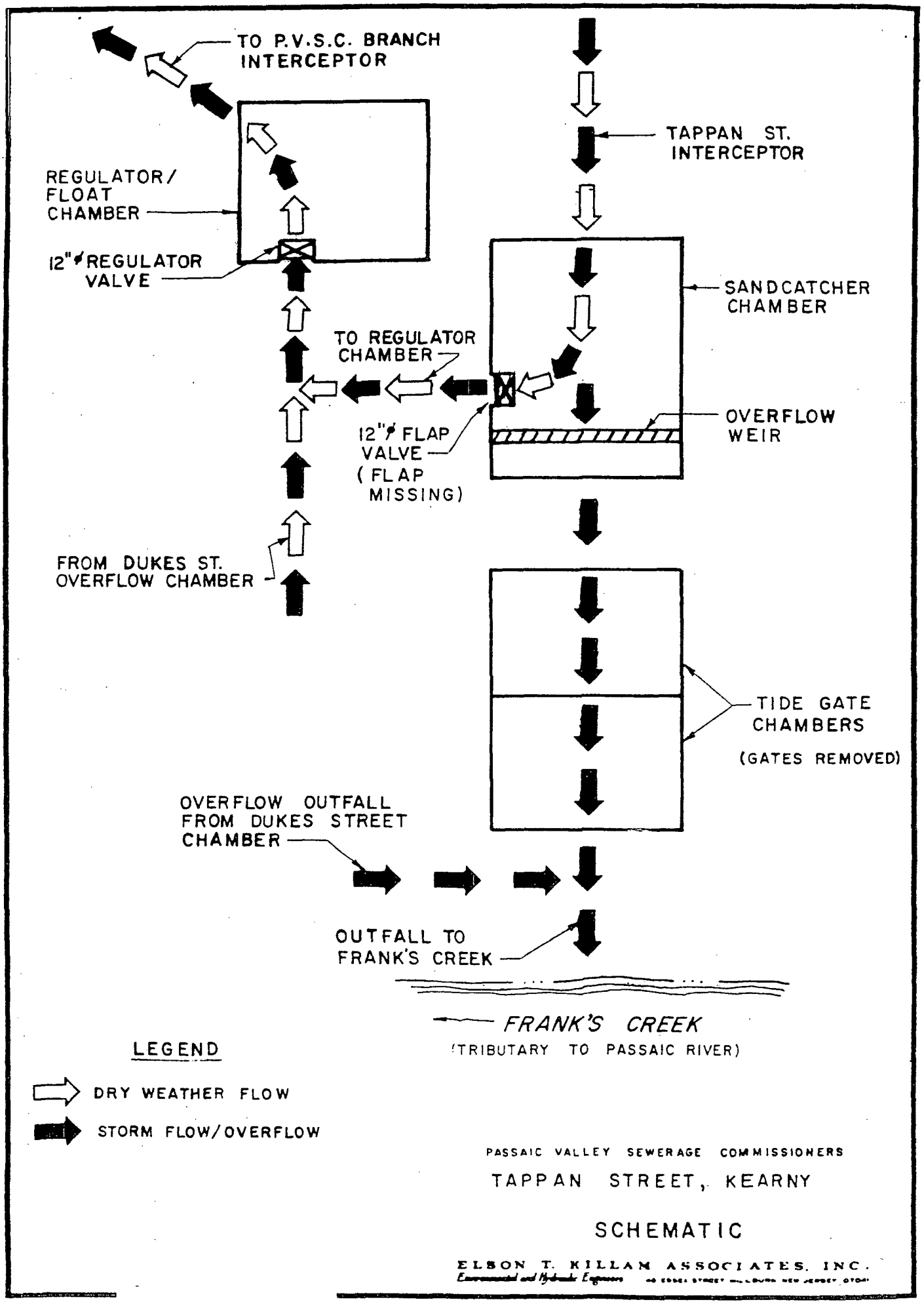


PLATE B

(3)

946190199



PASSAIC VALLEY SEWERAGE COMMISSIONERS

TAPPAN STREET, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190200

PLATE C

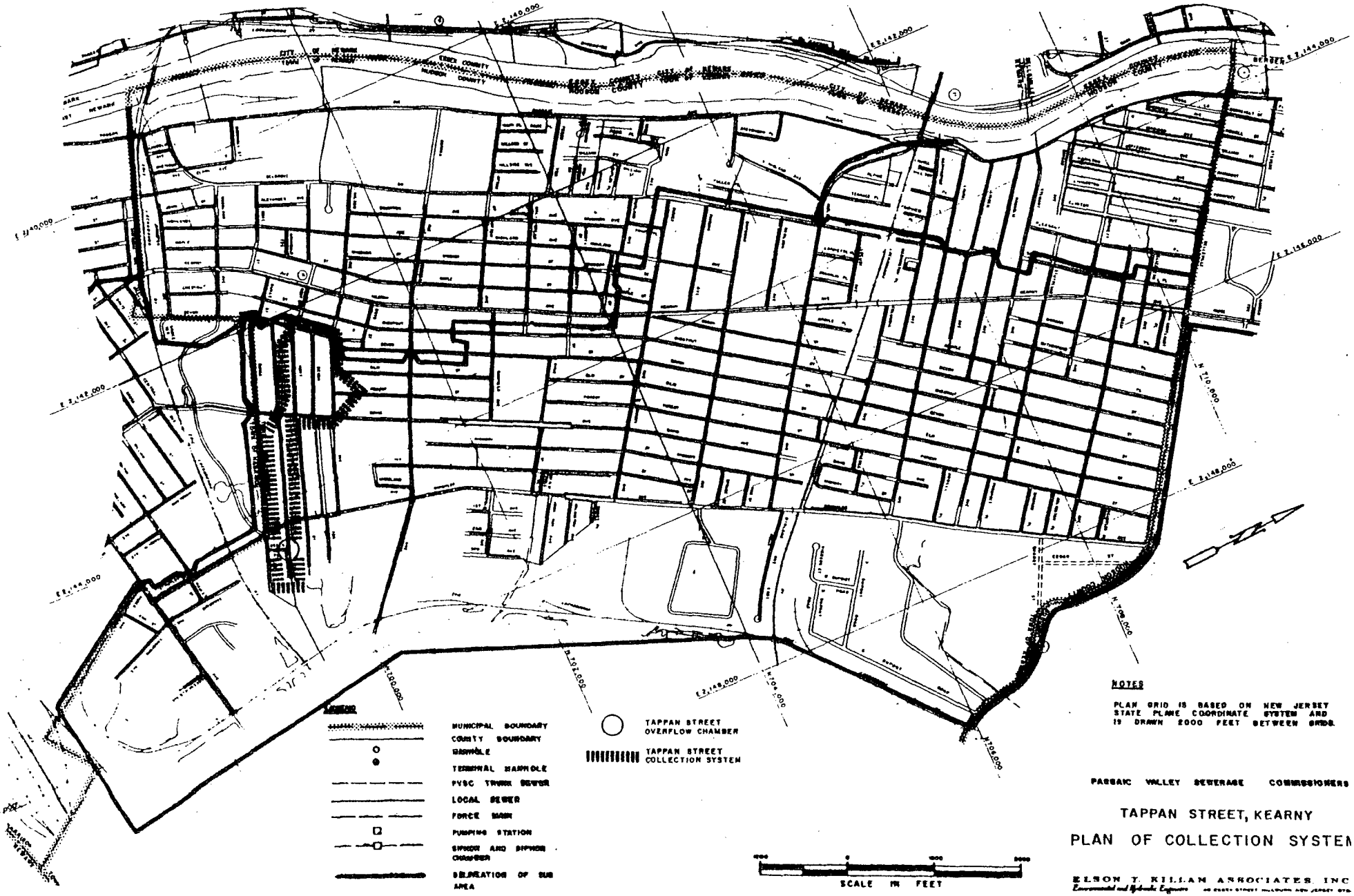
TAPPAN STREET OVERFLOW CHAMBER K-009 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	no stop logs or stop planks present
Tide Gate Condition:	both tide gates missing from chambers

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.055 square miles-35 acres
Average Daily Flow	
Seasonal Dry Weather:	0.35 MGD (estimated)
Seasonal Wet Weather:	0.41 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	2.0 MGD
Approximate Length of Combined Sewers Serving District:	7,600 linear feet



NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

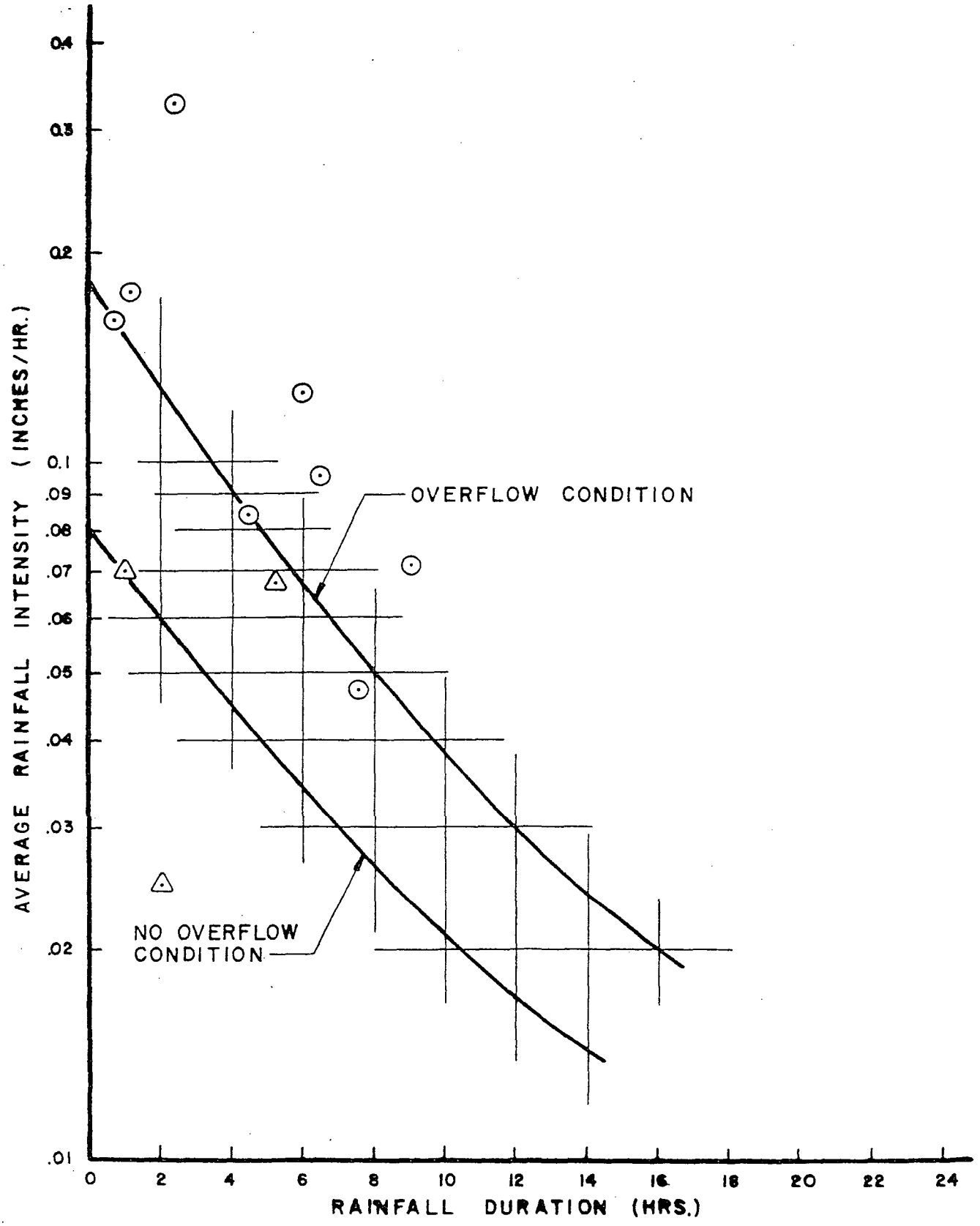
TAPPAN STREET, KEARNY

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE C

946190202



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

TAPPAN STREET, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

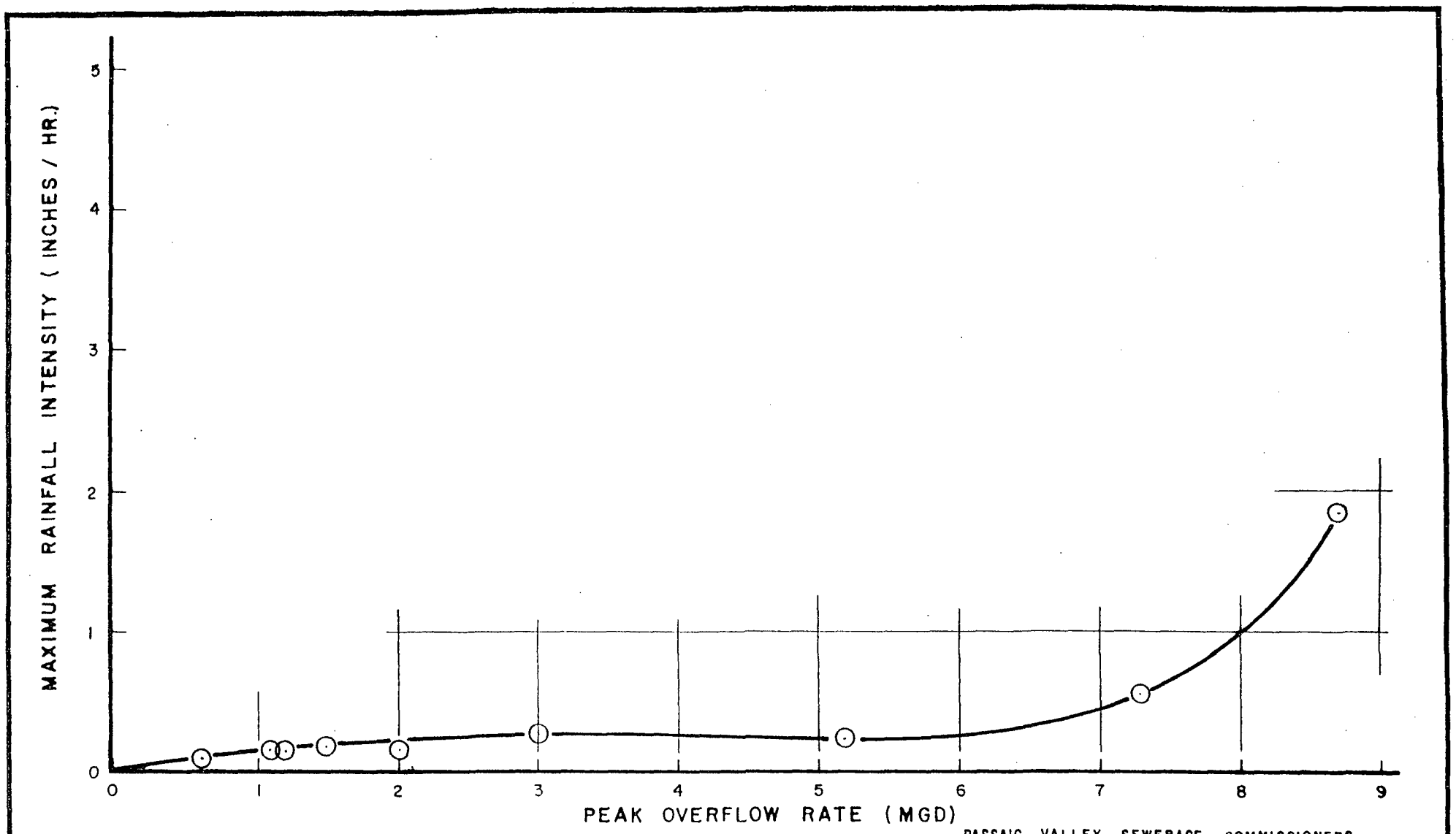
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190203

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

TAPPAN STREET, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

946190204

PVSC Reference # H-226

Date: 8/21/75

Elson T. Killam Associates - Infiltration Studies

Chamber # 025/K-009

Tappan Street, Kearny - Sandcatcher

Sampler #370

11:45 - 8/19/75 to 11:45 - 8/20/75

Set #76

	24 SAMPLES						BASELINE		
SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	7.5	57	46	80.7	127	33	26.0	47	36.9
2	7.3	94	84	89.4	289	88	30.4	120	41.6
3	7.4	129	101	78.3	400	125	31.3	211	52.8
4	7.2	129	106	82.2	420	105	25.0	324	77.2
5	7.2	138	130	94.2	404	130	32.2	270	66.9
6	7.2	77	59	76.7	495	120	24.3	349	70.5
7	-	232	198	85.3	471	110	23.4	372	79.0
8	7.2	93	73	78.5	543	180	33.2	222	40.9
9	7.0	89	64	71.9	503	145	28.9	302	60.0
10	7.0	138	-	-	491	130	26.5	300	61.1
11	7.1	74	64	86.5	436	140	32.1	169	38.8
12	7.1	127	107	84.3	313	96	30.6	168	53.7
13	7.6	149	135	90.6	273	88	32.2	117	42.9
14	7.3	101	89	88.2	198	63	31.8	78	39.4
15	7.6	69	61	88.4	131	42	32.0	87	66.3
16	7.6	37	35	94.6	103	30	29.1	64	62.1
17	7.5	41	36	87.8	75	27	36.0	45	60.0
18	7.5	42	36	85.7	95	30	31.6	60	63.2
19	7.4	40	37	92.5	107	36	33.6	54	50.4
20	7.7	187	166	88.7	257	76	29.5	132	51.5
21	7.7	400	172	43.0	618	125	20.3	289	46.8
22	7.6	328	154	47.0	764	160	20.9	378	49.5
23	7.5	256	111	43.4	590	165	28.0	300	50.8
24	7.4	270	170	43.3	606	195	32.2	-	-
							29.2		54.9

946190205

P.V.S.C. Reference # L - 44 Date 12/10/74

Elson Killam Associates-Infiltration Studies- Set # 4
Tappan Street, Kearny - Third manhole upstream from sandcatcher
1:50 12/9/74 to 1:50 12/10/74

23 Samples - Mostly partially filled Baseline

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	8.4	294	188	64.0	496	144	29.0	385	77.7
2	7.8	426	306	71.9	604	185	30.6	-	-
3	7.5	358	212	59.3	500	176	35.2	-	-
4	7.3	356	240	64.7	684	215	31.5	-	-
5	7.6	256	162	62.5	520	168	32.3	-	-
6	7.6	308	202	65.6	504	148	29.5	-	-
7	7.8	218	134	61.5	480	160	33.4	335	69.8
8	7.8	276	206	74.7	356	123	33.6	-	-
9	7.8	294	208	70.8	344	135	39.3	288	83.8
10	7.8	222	144	64.9	280	108	38.6	173	61.8
11	7.6	196	114	58.2	176	84	47.7	128	72.8
12	7.8	222	154	69.4	136	52	38.2	80	58.8
13	7.9	222	148	67.7	120	48	40.0	63	52.5
14	8.0	230	162	70.4	112	44	39.3	-	-
15	8.1	290	218	75.2	196	93	47.4	150	76.5
16	8.1	314	238	75.8	280	120	42.9	203	71.8
17	7.8	416	316	76.0	392	176	44.9	348	88.8
18	7.8	480	388	80.8	468	224	47.9	270	57.7
19	7.8	496	388	78.3	604	180	29.8	-	-
20	7.8	592	328	55.5	680	205	30.2	-	-
21	8.6	456	324	71.0	600	184	30.7	-	-
22	8.0	270	180	66.7	484	140	29.0	298	61.7

946190206

P.V.S.C. Reference # L - 44

Date 12/10/74

Elson Killam Associates-Infiltration Studies - Set # 4
Tappan Street, Kearny - Third manhole upstream from sandcatcher
1:50 12/9/74 to 1:50 12/10/74

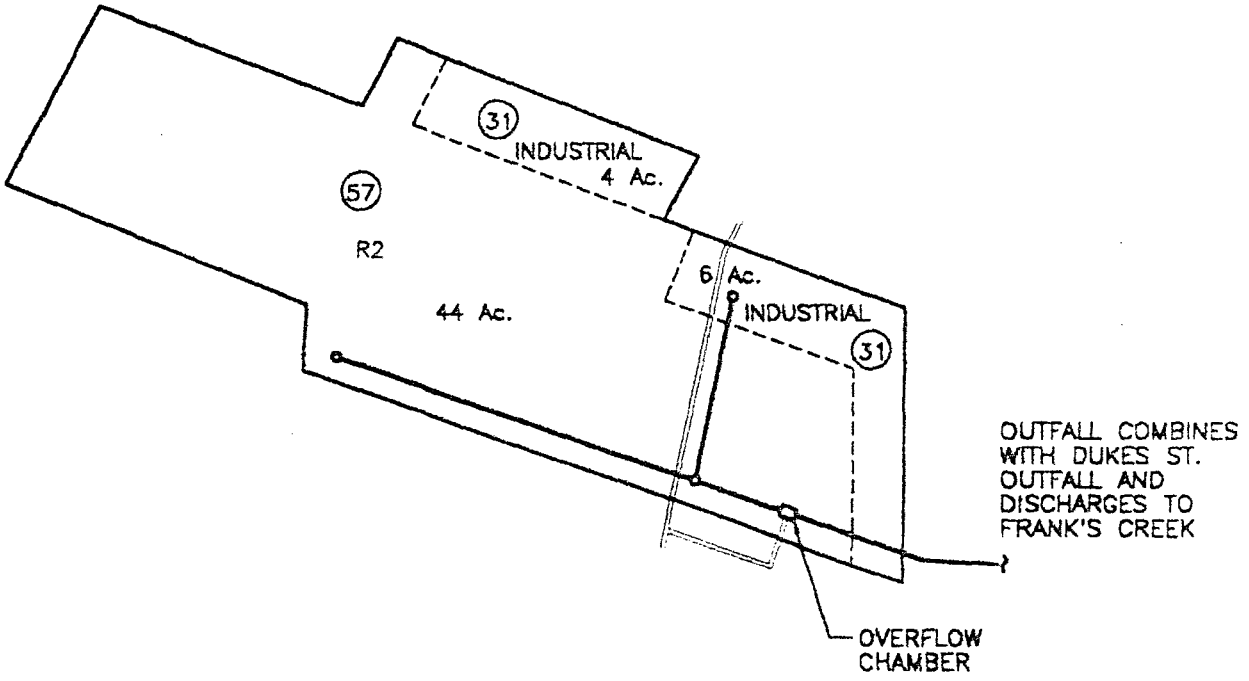
23 Samples - Mostly partially filled

Baseline

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./ C.O.D.	B.O.D	B.O.D/ C.O.D.
23	8.2	292	212	72.6	524	164	31.0	283	54.0
						AVERAGE	36.2		

946190207

LAND USE	%	ACRES
R3	---	---
R2	81	44
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	19	10
COMMERCIAL	---	---
TOTAL	100	54



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
TAPPAN STREET OVERFLOW
TOWN OF KEARNY

BKillam
Associates & Consulting Engineers

946190208

FIGURE K-009

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

DUKES STREET, KEARNY
K-010

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

DUKES STREET OVERFLOW CHAMBER, KEARNY

This overflow chamber serves a small area of only 25 acres. This area is served entirely with combined sewers.

The average daily dry weather flow was estimated to be 0.17 MGD, and during wet weather periods was estimated to be 0.20 MGD. This overflow joins the overflow from Tappan Street, merging into a common outfall line which discharges into an open ditch leading to Frank's Creek.

Metering and sampling facilities were installed in this overflow chamber beginning May 1, 1975, and extending through October 24, 1975. During this period of time, 41 rainfalls were recorded. It has been estimated that overflow occurred on 37 occasions. On the basis of 70 to 90 rainfalls occurring in one year, it has also been estimated that from 65 to 80 overflows would occur at this chamber.

It was found that the rainfall intensity required to cause overflow was only about 0.03 to 0.04 inches per hour. Peak overflow rates of 6.5 MGD were recorded, and the volume of overflow was found to be only about 0.8 MG.

The sample of the dry weather flow indicated that suspended solids averaged 263 mg/l and the BOD averaged 234 mg/l.

The storm sample which was collected indicated an average concentration of 178 mg/l for suspended solids, and 189 mg/l for BOD. The lower storm sample values would appear to reflect the dilution effects of storm flows.

ELSON T. KILLAM ASSOCIATES, INC.

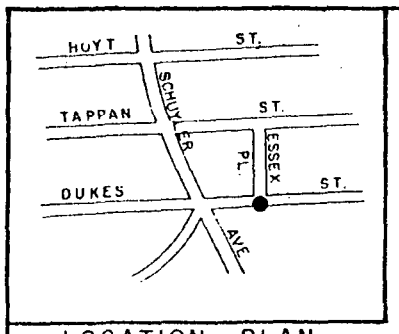
OVERFLOW DATA EXTRACT

DUKES STREET OVERFLOW CHAMBER

KEARNY

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Frank's Creek tributary to Passaic River
Character of District Served:	Primarily residential with some industrial flow
Overflow Location (See Plate A):	At intersection of Dukes Street and Essex Place
District Outlet Sewer (See Plates A and B):	24" diameter VTP sewer
Outfall to River (See Plates A and B):	24" diameter VTP sewer
Outfall Condition:	clear and functioning
Tidal Effects:	none
Surcharge Effects:	surcharge observed at times due to outfall obstructions
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

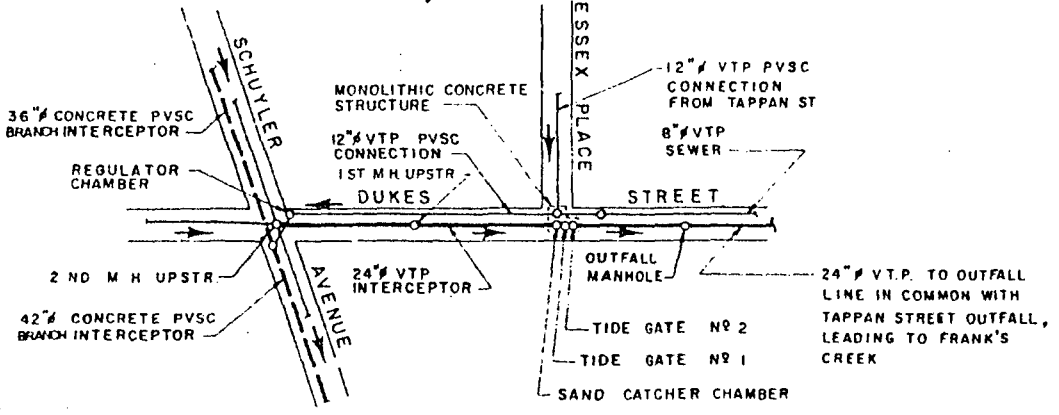


LOCATION PLAN

SCALE IN FEET

LEGEND

- → DIRECTION OF FLOW
- S.C = SAND CATCHER
- V.T.P = VITRIFIED TILE PIPE
- UP STR = UP STREAM
- DN STR = DOWN STREAM
- N.T.S = NOT TO SCALE
- ● = OVERFLOW LOCATION

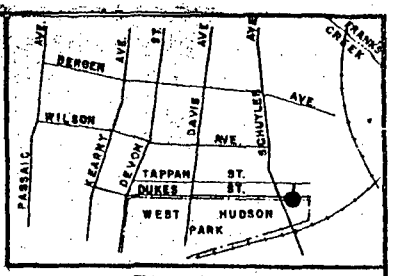


PLAN

SCALE IN FEET

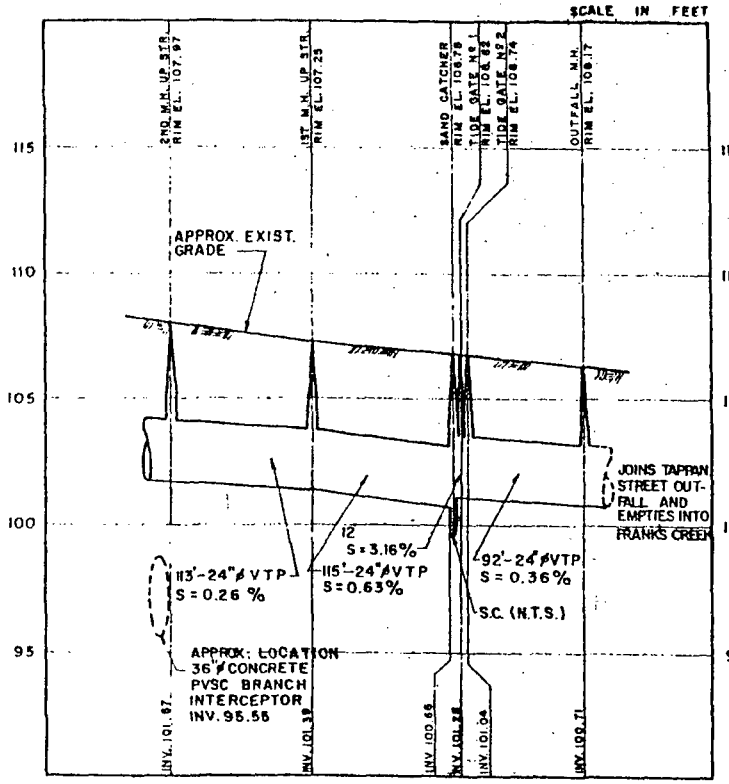
NOTES

1. ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.
2. THE TAPPAN AND DUKES STREET OUTFALLS JOIN INTO A COMMON OUTFALL PIPE WHICH EMPTIES INTO AN OPEN DITCH IN THE MEADOWLANDS ALONG THE ERIE – LACKAWANNA RAILROAD.



KEY MAP

SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON U.S.M. Nº 1291 AS ESTABLISHED BY N.J.D. JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER K-010

DUKES STREET, KEARNY

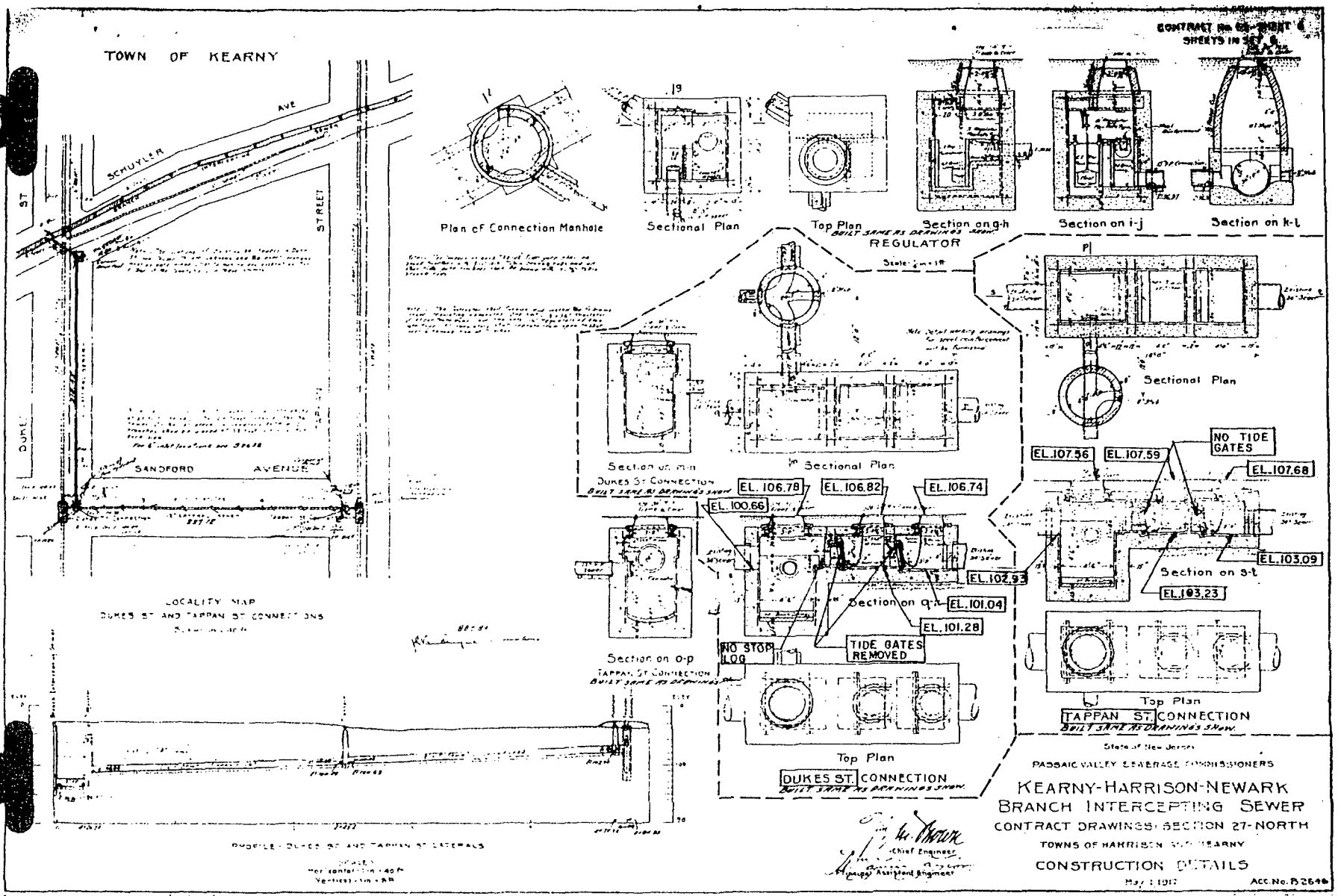
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A

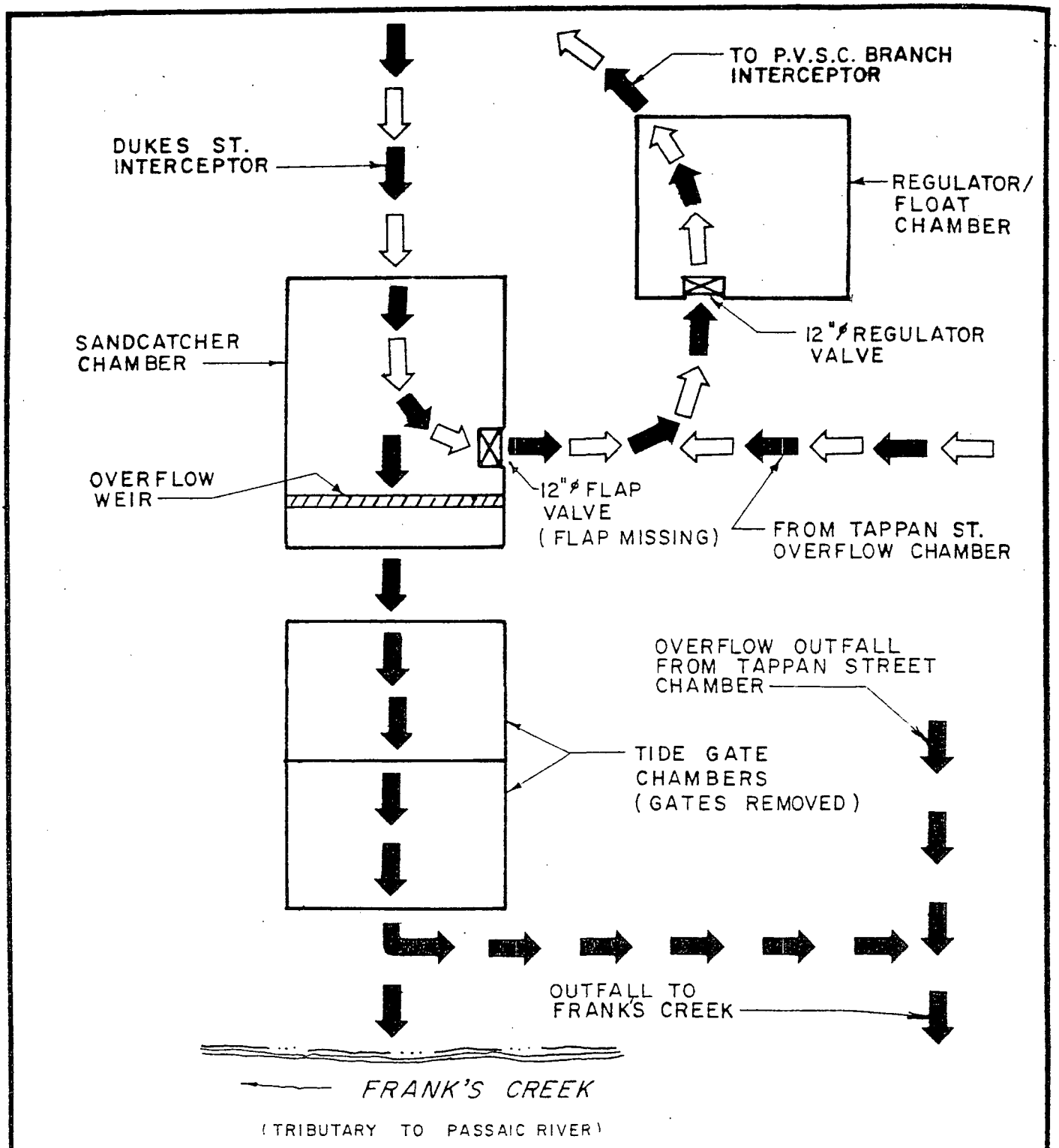
946190212



DUKES ST., TAPPAN ST. (2)

PLATE B

946190213



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DUKES STREET, KEARNY

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

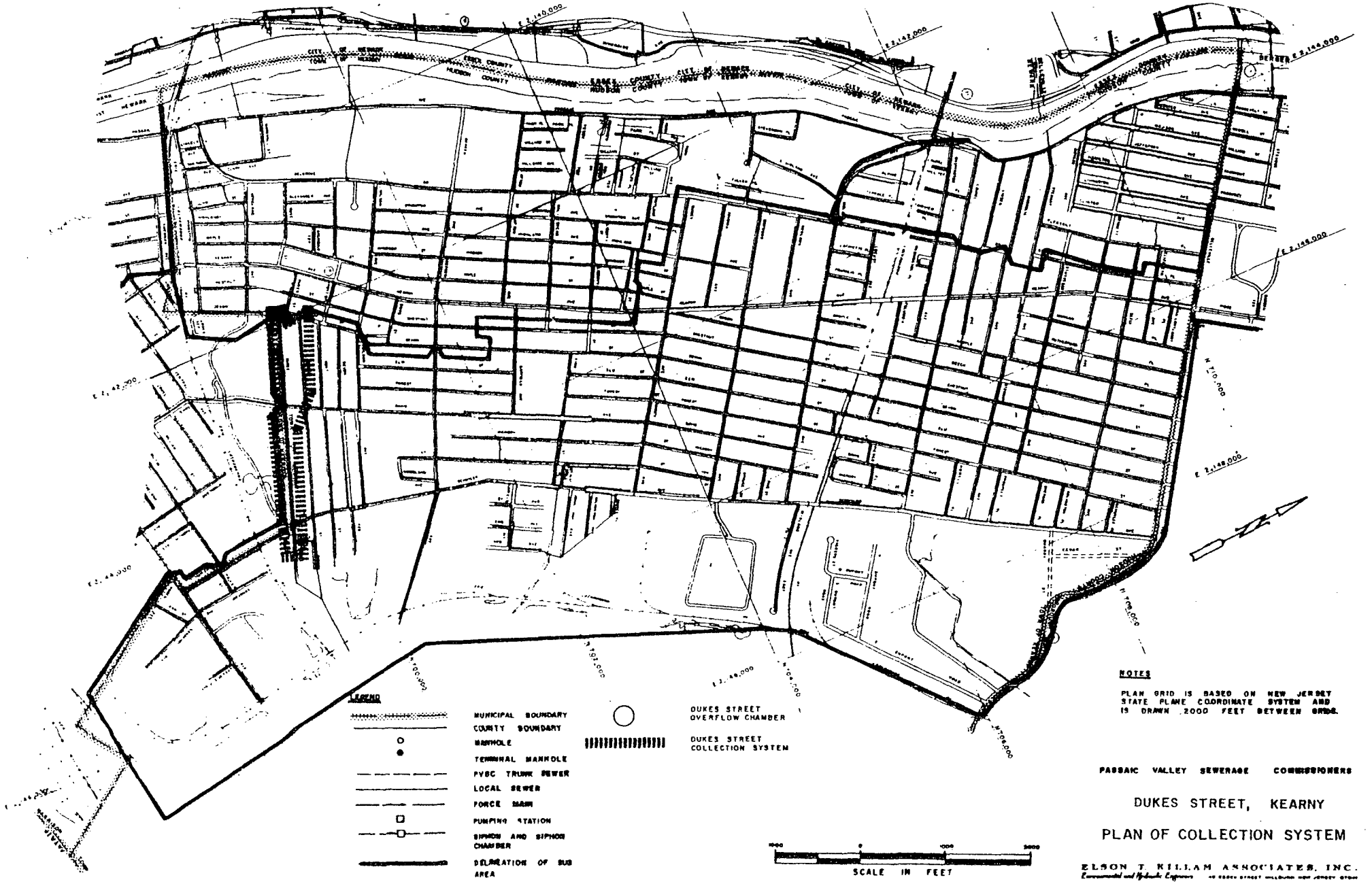
DUKES STREET OVERFLOW CHAMBER K-010 (Cont'd.)

Condition of Regulator:	appears inoperable (located at Dukes St. and Schuyler Ave.)
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	none (no stop logs exist)
Tide Gate Condition:	both tide gates missing

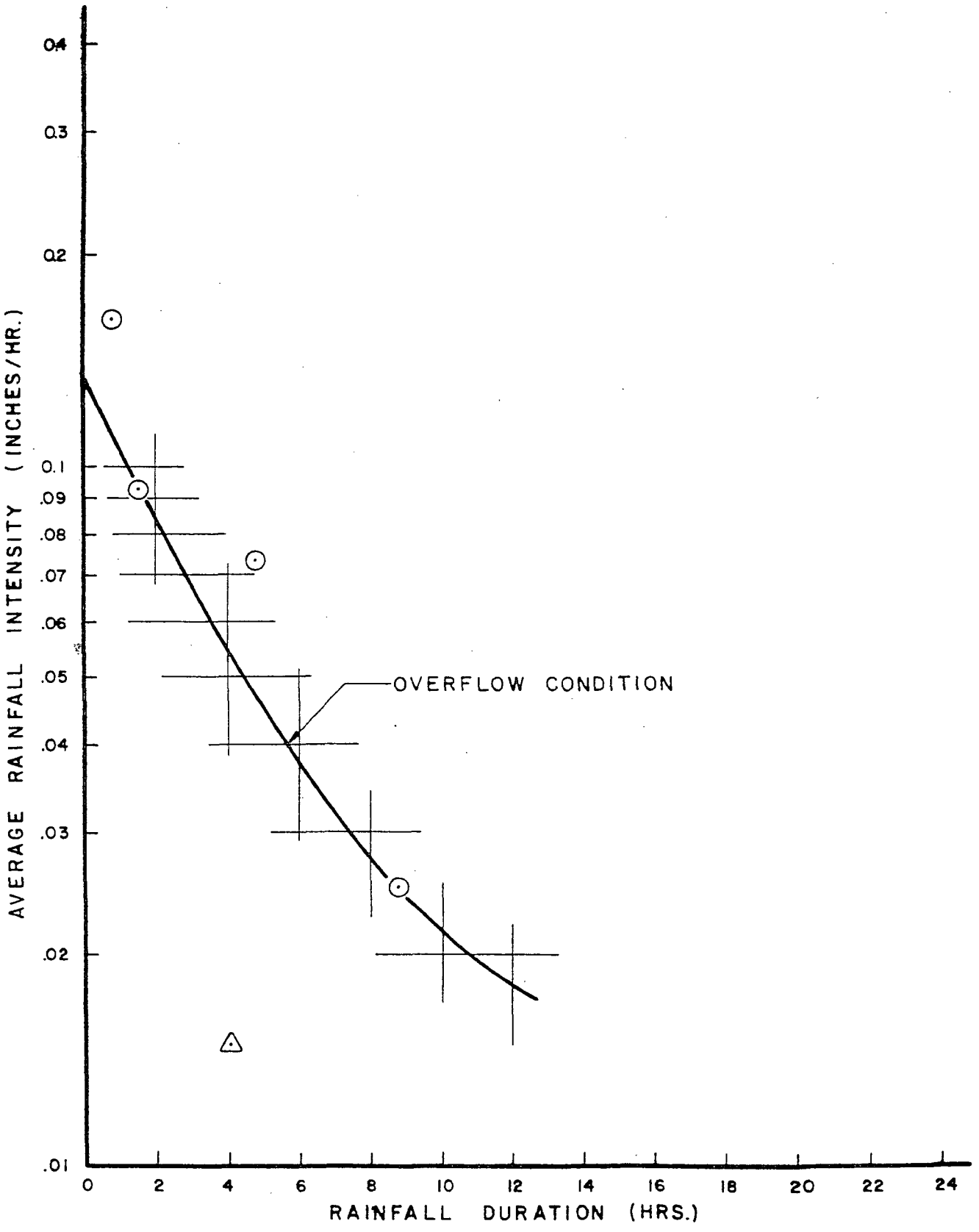
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.039 square miles--25 acres
Average Daily Flow	
Seasonal Dry Weather:	0.17 MGD (estimated)
Seasonal Wet Weather:	0.20 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	2.0 MGD
Approximate Length of Combined Sewers Serving District:	5,500 linear feet


LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
DUKES STREET OVERFLOW CHAMBER
DUKES STREET COLLECTION SYSTEM
SCALE IN FEET
NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
PASSAIC VALLEY SEWERAGE COMMISSIONERS
DUKES STREET, KEARNY
PLAN OF COLLECTION SYSTEM
ELSON T. KILLAM ASSOCIATES, INC.
PLATE

946190216



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DUKES STREET, KEARNY

AVERAGE RAINFALL INTENSITY

VS.

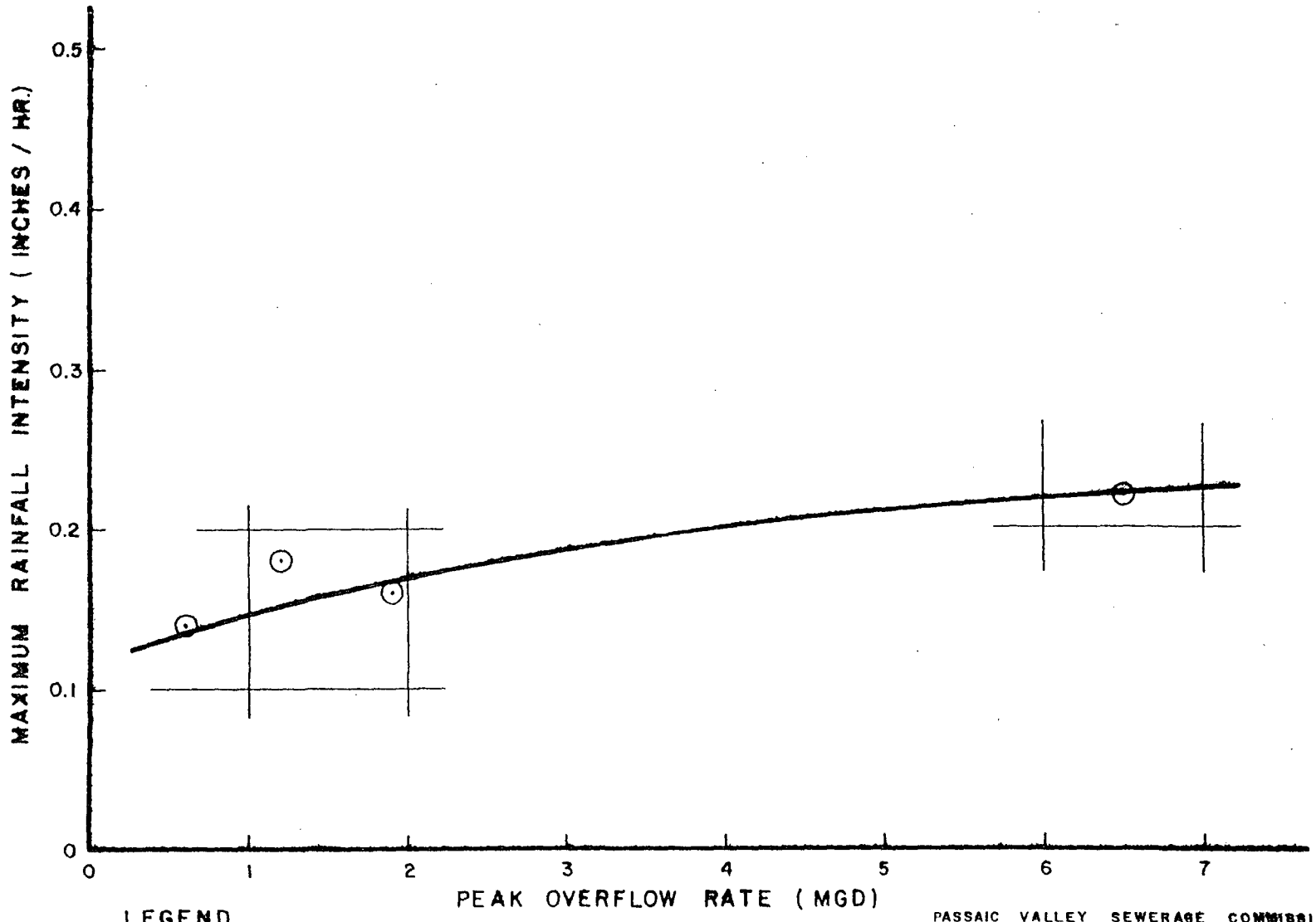
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 EAGLE STREET MILLBURN NEW JERSEY 07041

946190217

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DUKES STREET, KEARNY

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE F

946190218

PVSC REFERENCE # L-32

DATE: 12/6/74

ELSON T. KILLAM ASSOCIATES - INFILTRATION STUDIES
Duke Street, Kearny
Set #6
24 samples

BASELINE

SAM. #	pH	T.S.S.	V.S.S.	%VOL.	C.O.D.	T.O.C.	T.O.C./ C.O.D.	B.O.D.	B.O.D./ C.O.D.
1	7.5	500	316	63.2	596	180	30.2	255	42.8
2	7.4	1352	280	20.7	1440	220	15.3	232	16.1
3	7.5	856	216	25.2	412	185	44.9	222	54.0
4	7.1	246	210	85.4	518	172	33.2	284	54.9
5	7.2	570	428	75.1	583	228	39.1	425	73.0
6	7.4	206	192	93.2	853	204	23.9	---	----
7	7.7	100	90	90.0	404	141	34.9	---	----
8	7.6	148	146	98.6	392	124	31.6	272	69.4
9	7.7	154	130	84.4	326	150	46.0	238	73.0
10	7.7	66	60	90.9	261	117	44.8	199	76.2
11	7.5	4	4	100.0	245	80	32.7	169	69.0
12	7.5	24	24	100.0	163	54	33.1	143	87.6
13	7.6	118	118	100.0	237	84	35.4	172	72.6
14	7.5	808	158	19.6	110	43	39.1	104	94.5
15	7.6	18	18	100.0	73	40	54.8	---	----
16	7.6	60	60	100.0	82	49	59.8	---	----
17	8.2	90	90	100.0	261	104	39.8	180	69.0
18	8.5	198	198	100,0	453	192	42.4	274	60.6
19	8.2	190	182	95.8	559	171	30.6	270	48.3
20	7.7	178	166	93.3	596	184	30.9	275	46.2
21	7.7	116	116	100.0	555	140	25.2	258	46.5
22	7.7	88	88	100.0	502	141	28.1	257	51.2
23	7.5	148	146	98.6	506	129	25.5	215	42.5

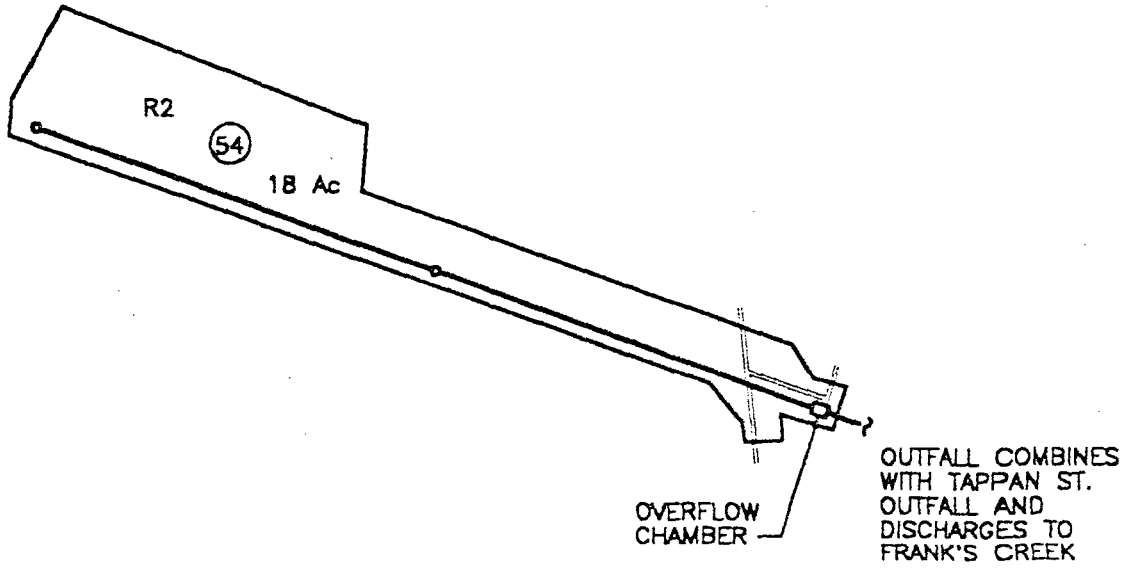
PVSC REFERENCE #L-32 (CONTINUED)
ELSON T. KILLAM ASSOCIATES - INFILTRATION STUDIES

DATE: 12/6/74

BASELINE

SAM. #	pH	T.S.S.	V.S.S.	%VOL.	C.O.D.	T.O.C.	T.O.C./ C.O.D.	B.O.D.	B.O.D./ C.O.D.
24	7.6	76	72	94.7	408	104	25.5	232	56.9
							35.5		

LAND USE	%	ACRES
R3	---	---
R2	100	18
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	---	---
TOTAL	100	18



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
DUKES STREET OVERFLOW
TOWN OF KEARNY

Killam
Associates Consulting Engineers

946190221

FIGURE K-010

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

CENTRAL AVENUE, EAST NEWARK
E-001

1976

ELSON T. KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

CENTRAL AVENUE OVERFLOW CHAMBER, EAST NEWARK

This overflow chamber serves a very small drainage area, namely, 26 acres. The area is served with combined sewers. The average daily flow has been estimated to be only 0.14 MGD under dry weather flow conditions, but as high as 0.27 MGD during the wet weather months.

Metering and sampling facilities were installed in this chamber and were maintained during the period extending from April 24, 1975 through June 6, 1975. During this period of time, rainfalls occurred on seventeen occasions. It has been estimated or found that overflows occurred on twelve occasions. It has also been estimated that overflows will occur at this chamber approximately 50 to 65 times per year, based on rainfalls occurring from 70 to 90 times per year.

It was found that the average rainfall intensity required to cause overflow ranged from about 0.04 to 0.05 inches per hour, for a rainfall duration of about 8 hours or longer.

The peak rate of overflow was found to be about 62 MGD. The total volume of discharge was found to be as high as 1.2 MG.

It was found that backwater from the Passaic River entered this chamber and the sewer system during periods of exceptionally high tide. The staff of the PVSC has taken corrective action in order to reduce and eliminate this occurrence, which was of short-term duration.

The sample of the dry weather flows indicated an unusually dilute waste. The suspended solids was found to be only 60 mg/l as an average, and BOD was found to average only 47 mg/l.

The storm flow conditions indicated that the suspended solids and BOD again were relatively low, the former being found to range from a low of 36 mg/l to a high of 103 mg/l, and the latter ranging from a low of 34 mg/l to a high of 88 mg/l.

ELSON T. KILLAM ASSOCIATES, INC.

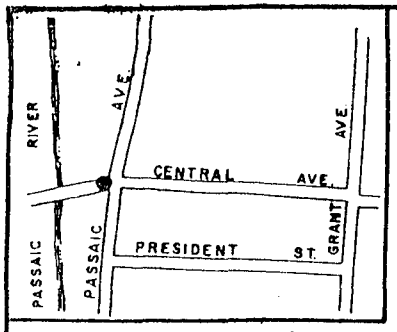
OVERFLOW DATA EXTRACT

CENTRAL AVENUE OVERFLOW CHAMBER

EAST NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	about equally residential and industrial
Overflow Location (See Plate A):	at intersection of Central Avenue and Passaic Avenue
District Outlet Sewer (See Plates A and B):	30" X 45" elliptical brick sewer
Outfall to River (See Plates A and B):	30" X 45" elliptical brick sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed due to capacity limitations and/or tide gate closure during high tide
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

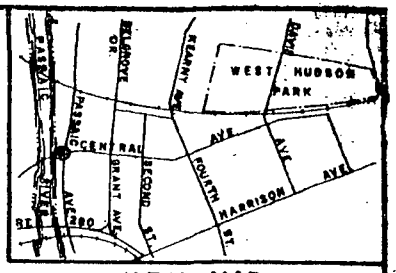


LOCATION PLAN

SCALE IN FEET

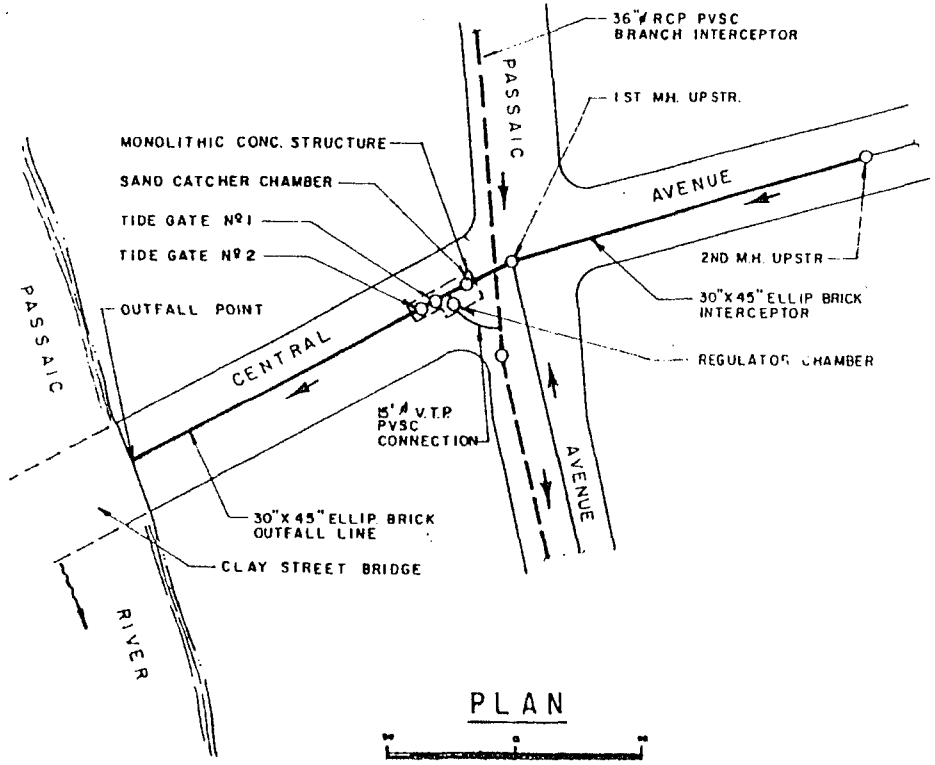
NOTE:
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND
- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UPSTREAM
- DN. STR. = DOWNSTREAM
- N.T.S. = NOT TO SCALE
- V.T.P. = VITRIFIED TILE PIPE
- R.C.P. = REINFORCED CONCRETE PIPE
- ● = OVERFLOW LOCATION



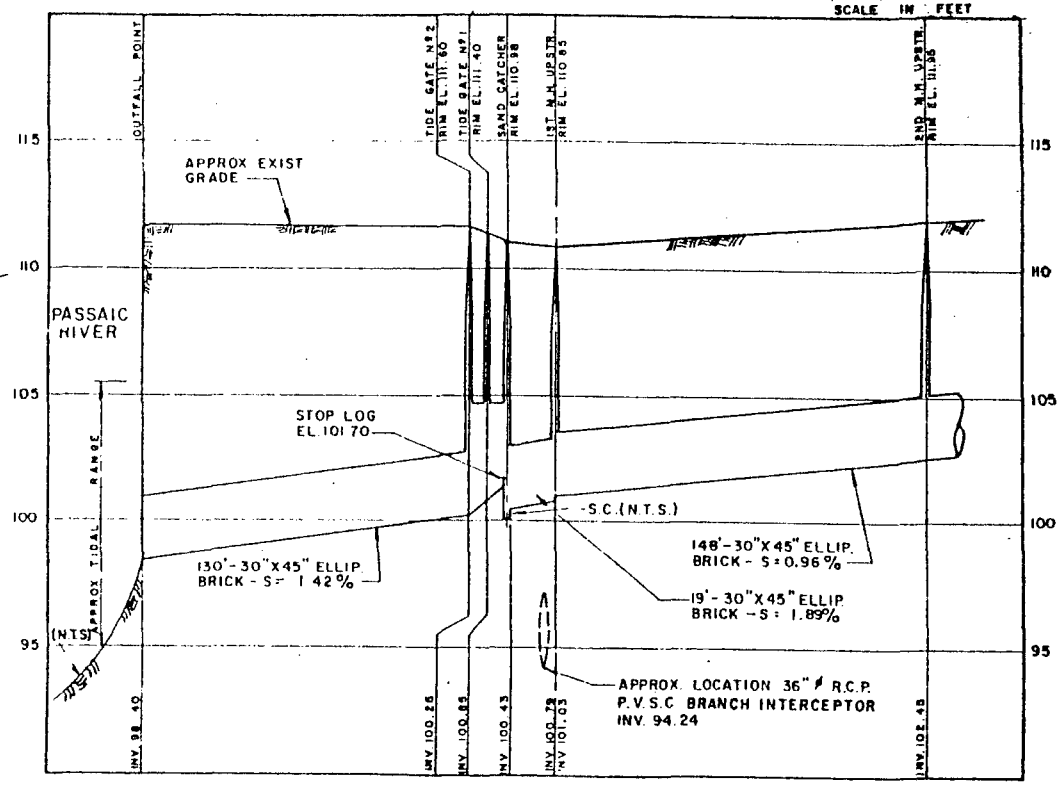
KEY MAP

SCALE IN FEET



PLAN

HORIZ. SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON U.S.M. MP 1934 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER E-001

CENTRAL AVENUE, EAST NEWARK

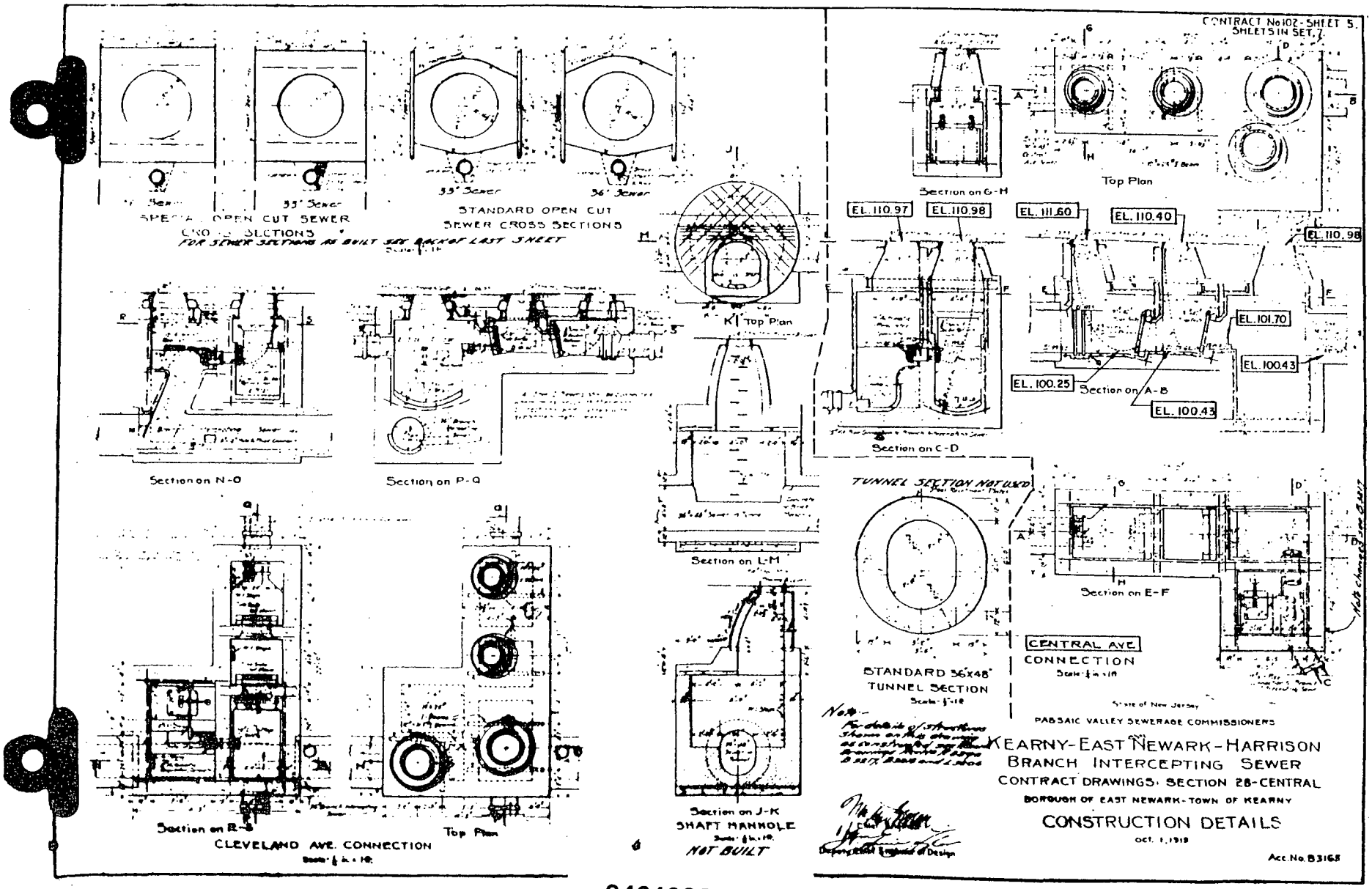
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

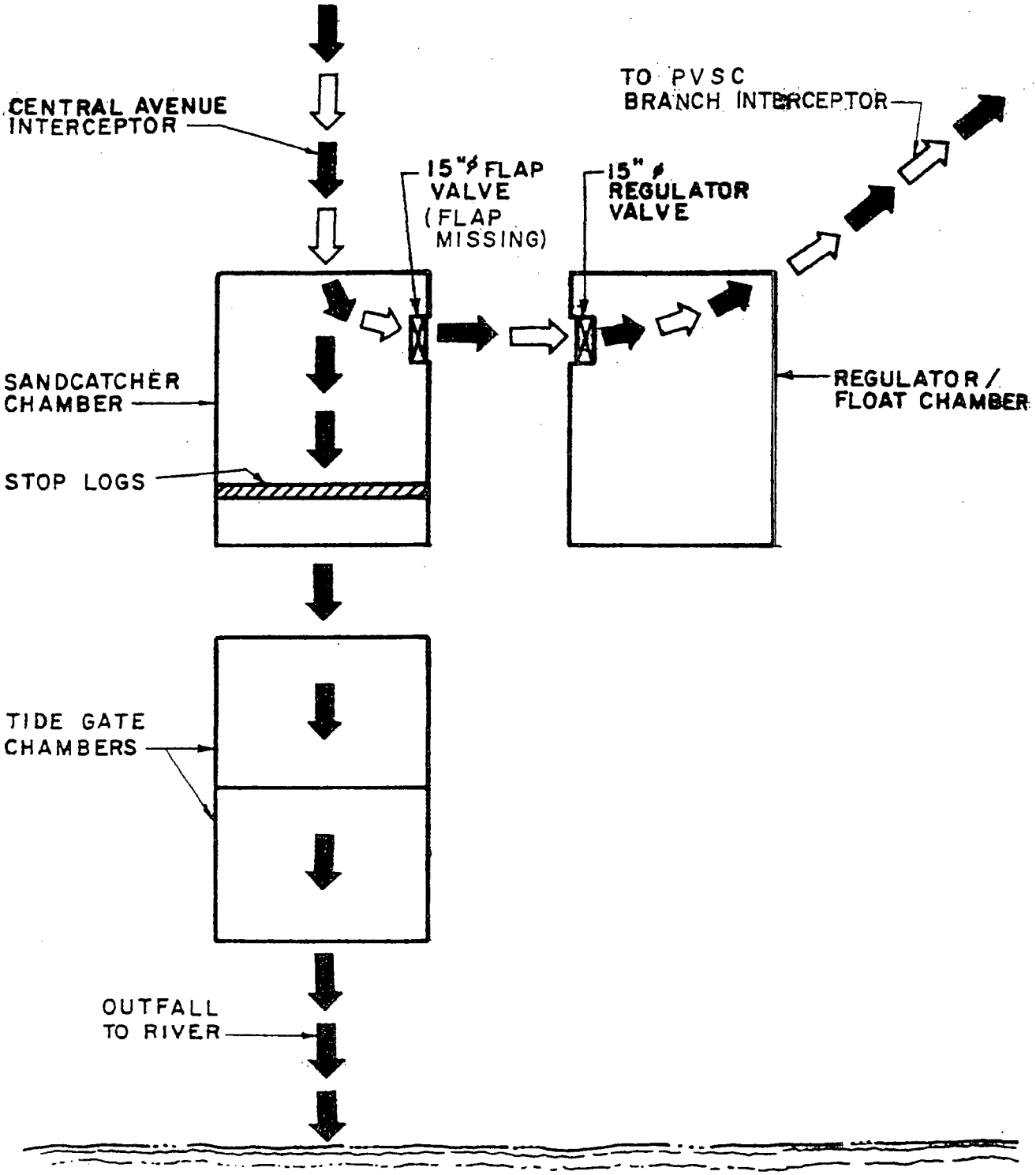
PLATE A

946190226



946190227

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CENTRAL AVENUE, EAST NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

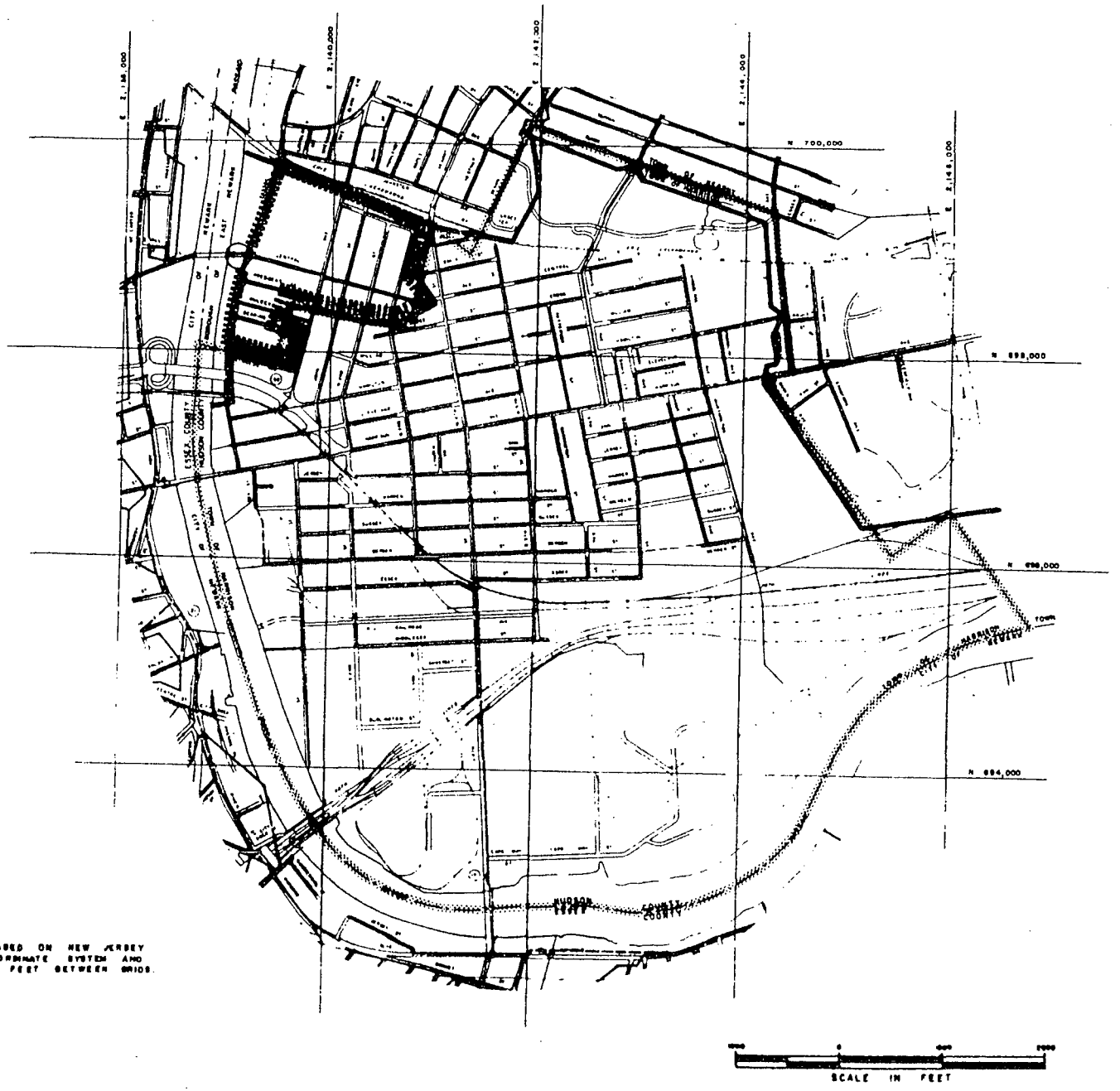
CENTRAL AVENUE OVERFLOW CHAMBER E-001 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	located at downstream end of sand catcher, just before portal to first tide gate chamber
Tide Gate Condition:	both tide gates leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.041 square miles-26 acres
Average Daily Flow	
Seasonal Dry Weather:	0.14 MGD (estimated)
Seasonal Wet Weather:	0.27 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	5.6 MGD
Approximate Length of Combined Sewers Serving District:	9,200 linear feet



LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVBC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- CENTRAL AVENUE OVERFLOW CHAMBER
- CENTRAL AVENUE COLLECTION SYSTEM

N

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

0 400 2000

SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

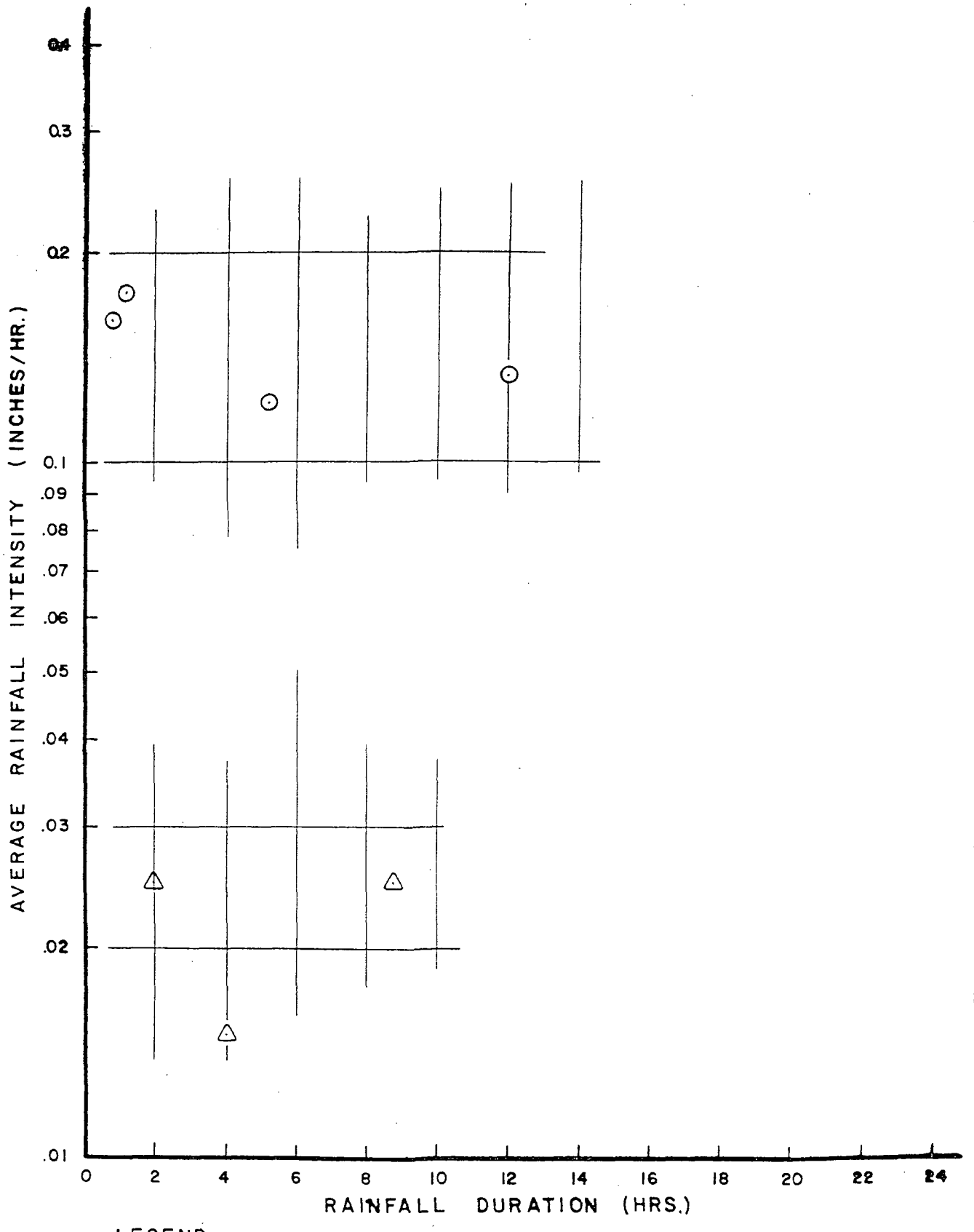
CENTRAL AVENUE, EAST NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D

946190230



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CENTRAL AVENUE, EAST NEWARK

AVERAGE RAINFALL INTENSITY

VS.

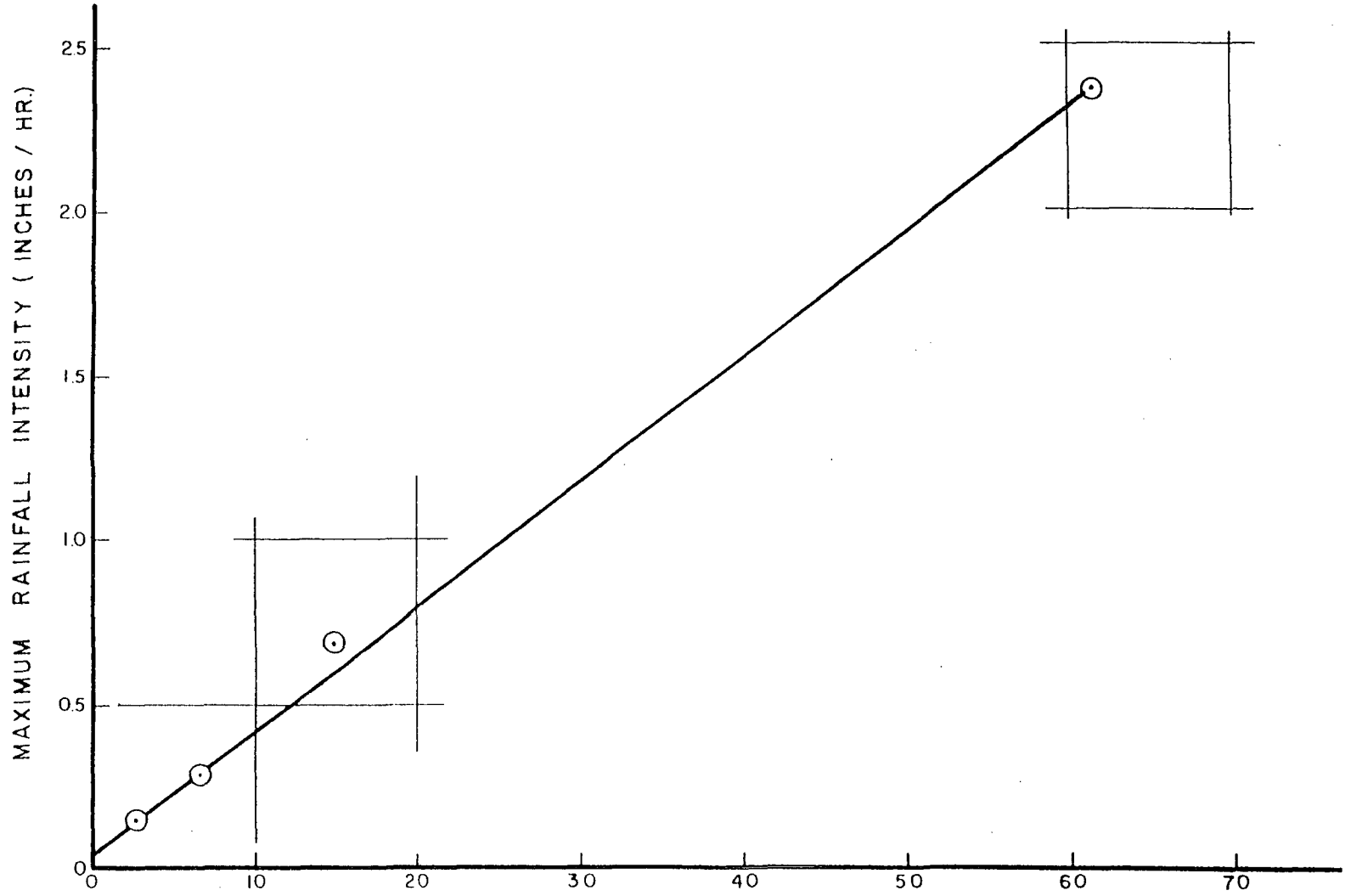
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946190231

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CENTRAL AVENUE, EAST NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

946190232

PLATE F

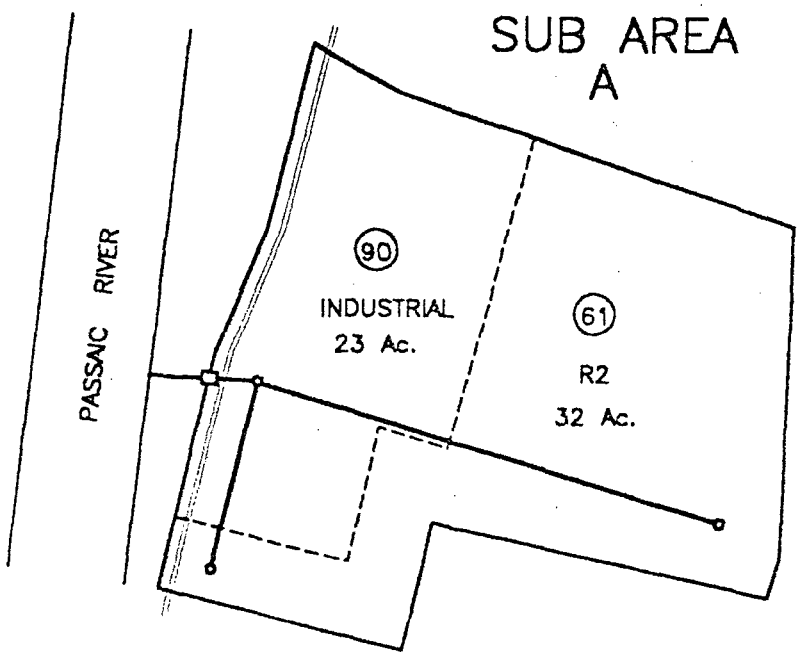
PVSC Reference # B-45 Date: 2/13/75

Elson T. Killam Associates - Infiltration Studies Sampler # 348-Set #38
Central Avenue, East Newark- In sandcatcher O.F.# 008/E-001
1015-2.10.75 to 1015-2/11/75

24 Samples Baseline

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	8.0	76	76	100.0	288	84	29.1	86	29.8
2	7.7	136	106	78.0	388	84	21.6	80	20.6
3	7.7	84	84	100.0	352	99	28.1	104	29.6
4	7.6	88	64	72.8	276	78	28.2	165	59.8
5	NOT ENOUGH SAMPLE				164	N O T	ENOUGH	SAMPLE	
6	NOT ENOUGH SAMPLE				508	N O T	ENOUGH	SAMPLE	
7	7.5	60	60	100.0	288	72	25.0	93	32.3
8	7.6	114	98	85.9	316	93	29.4	93	29.4
9	7.2	52	44	84.7	204	54	26.4	72	35.3
10	7.3	82	62	75.7	252	57	22.6	69	27.3
11	7.3	58	58	100.0	160	40	25.0	14	8.8
12	7.4	76	64	84.3	200	48	24.0	12	6.0
13	7.5	100	96	96.0	172	45	26.1	16	9.3
14	8.0	62	54	87.2	228	60	26.3	64	28.1
15	7.8	14	14	100.0	120	42	35.0	16	13.3
16	7.5	34	32	94.2	80	26	32.5	16	20.0
17	7.8	18	18	100.0	68	20	29.4	11	16.2
18	7.5	8	8	100.0	72	16	22.2	13	18.1
19	7.4	12	8	66.7	52	16	30.8	18	34.6
20	7.5	20	10	50.00	68	22	32.4	13	19.1
21	7.5	24	24	100.0	80	18	22.5	19	24.7
22	7.7	60	60	100.0	148	32	21.6	17	11.4
23	7.7	66	66	100.0	152	42	27.6	24	57.2
24	7.5	64	64	100.0	160	44	27.5	17	10.6
							27.0		24.6

LAND USE	%	ACRES
R3	---	---
R2	42	23
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	58	32
COMMERCIAL	---	---
TOTAL	100	55



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
CENTRAL AVENUE OVERFLOW
BOROUGH OF EAST NEWARK

Killam
Associates Consulting Engineers

FIGURE E-001

946190234